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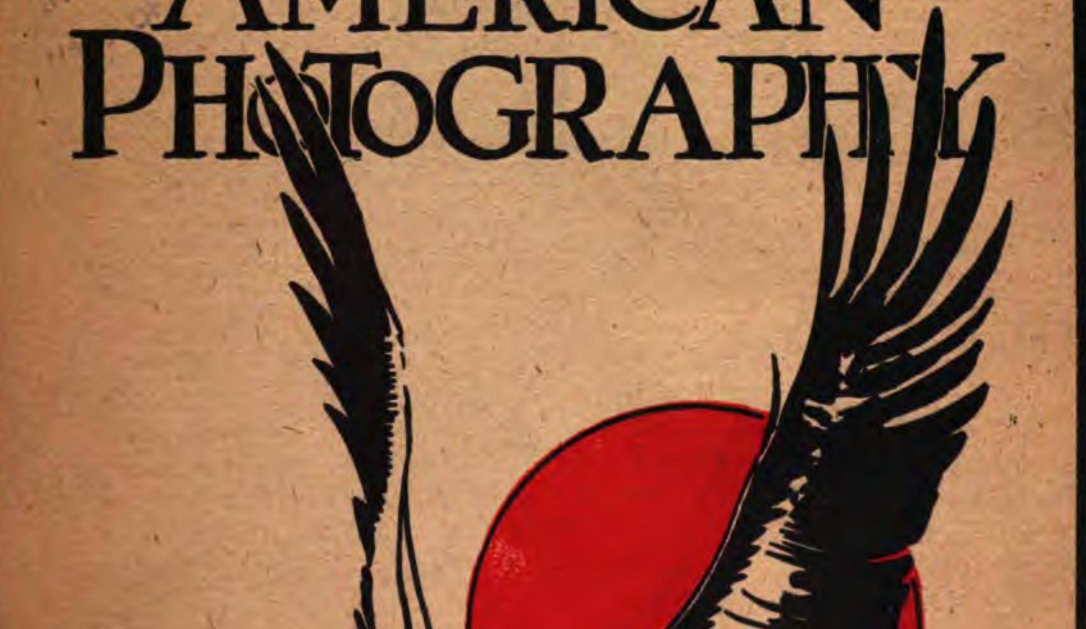

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TIME DEVELOPMENT

PRIZE ARTICLE BY LEO KRAFT

IT IS always more or less difficult, in the dim red light of the darkroom, for even the most experienced photographer to judge by inspection of the plate just when development is complete. This is more particularly true in the case of the average amateur photographer who develops plates or films only occasionally, and whose views cover a wide range of subjects, as, even with all other conditions the same, two different types of views may appear to be quite different at the time development is complete. If one is using different makes of plates or films or double coated plates, any inspection method of development is still more difficult, as the various emulsions will cause the negatives to appear different at the time development is finished. Some plates fix out more in the hypo than others, which is a further condition to be allowed for. There used to be a belief that a cold developer produced thinner negatives than a warm developer, but this was largely due to the fact that development was often stopped too soon, which might readily happen when attempting, by inspection, to determine the proper development time. Given two negatives of the same view, on the same brand of plate, and developed with the same developer, at different temperatures within the range usually met in practice, if the development has been timed on the basis of the temperature it will usually be impossible to distinguish between the negatives, while the prints made from them will be almost identical.

One other idea which many photographers still cling to, is the notion that it is possible to put individuality into a negative by special manipulation during development. Ruling out a very small percentage of special views, I think this idea may be readily disproved to anyone's satisfaction by simply trying the experiment. Views containing extreme contrasts, such as interiors showing brightly lighted windows, should have special development, but practically all other views, from portraits to copies of black and white drawings, need no special treatment. These subjects certainly constitute over 95% of the average negatives. I have developed portraits on many different plates and films, groups, flashlights, landscapes, and even copies of black and white drawings on process plates, all in the same developer by a strict adherence to the rules and methods to be described, and not only have the results been entirely satisfactory in every case, but I am positive that the general run of negatives has averaged much higher than would have been obtained by any other method.

Any number of arbitrary rules have been proposed to enable one to determine just when the plate should be removed from the developer, but the very fact that these rules

SPEED NUMBERS

Plate or Film	Speed Number
Hammer Red Label	25
Kodak Film	20
Portrait Film	30
Seed Graflex	25
Seed 26 X	30
Seed Process	5
Speedex Film	15
Standard Orthonon	35
Standard Polychrome	30
Stanley 50	35

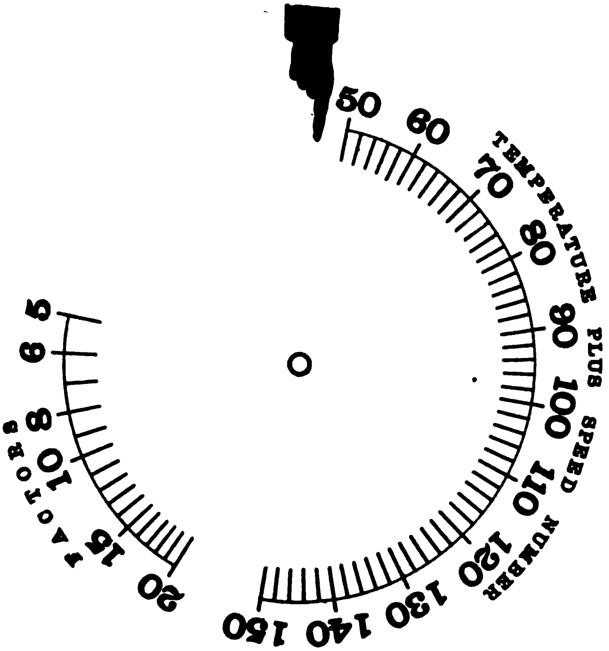
INSTRUCTIONS

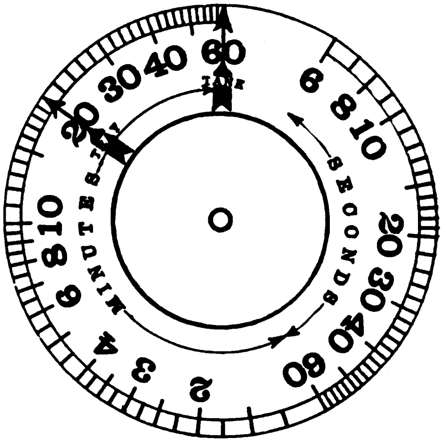
Time-Temperature Method

Add speed number of plate to temperature of developer. Set index arrow marked "Tray" or "Tank," as the case may be, at this sum, and the hand will then point to total time for development.

Factorial Method

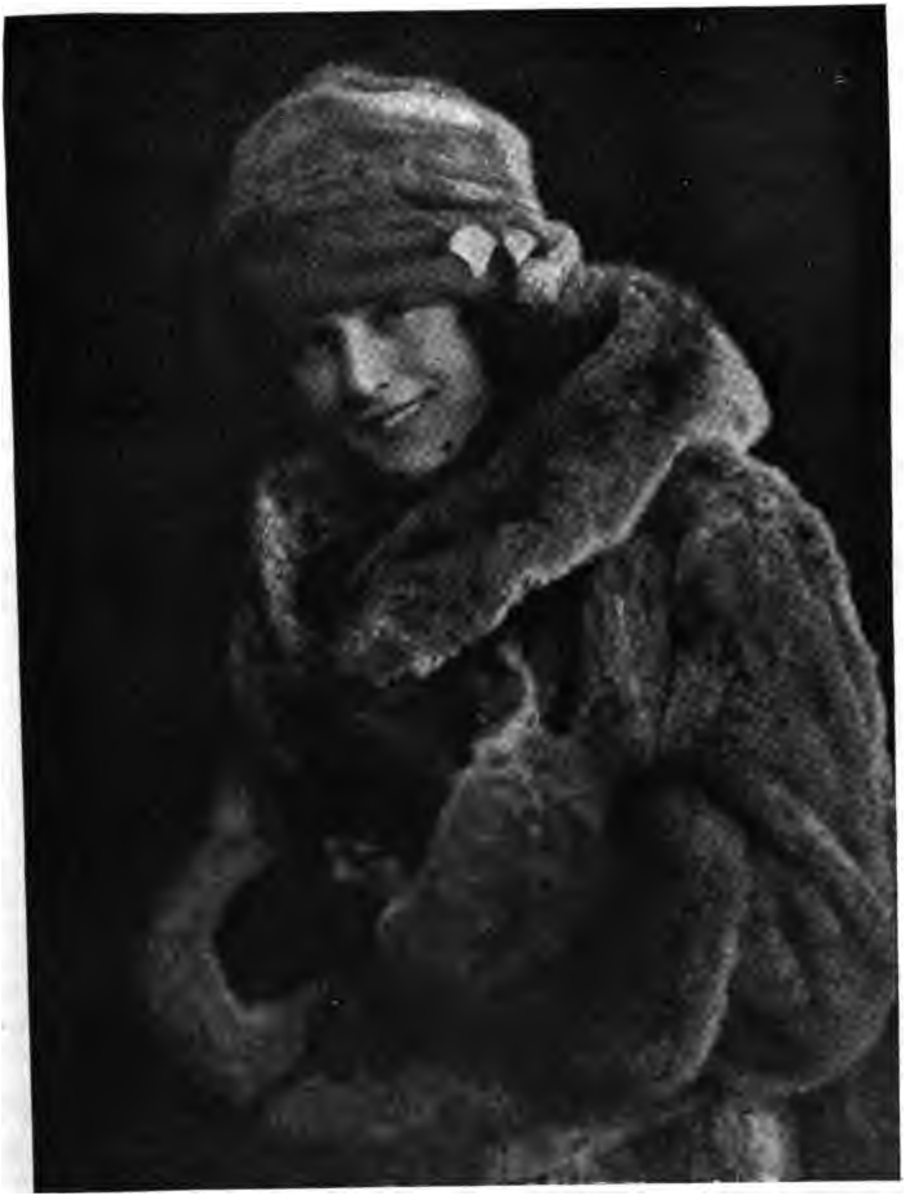
Set developer factor at time required for first appearance of the image, and the hand will then point to total time required for development.





are so varied shows that little reliance is to be placed on any of them. That there is, however, no need for any uncertainty in development has been clearly demonstrated many times, and if the developer is mixed according to the same formula, its action on any brand of plate will depend only on the temperature. That is, the time required for complete development will vary with the temperature in a definite and fixed ratio for the developer used, and having determined this ratio once and for all, the time required may always be definitely known. Different brands of plates require different times for development, but this also will be a fixed quantity to be determined once and then used thereafter.

Two general methods have been proposed for determining the time required for development, one of which is known as the factorial method and the other as the time and temperature method or thermo-method. The factorial method is based upon the ratio which the time required for the first appearance of the image is assumed to bear to the total time required for complete development. With the factorial method, the time measured for the first appearance of the image, after the developer is applied, is multiplied by a known number or factor, the result being the total time required for development. Suppose that with a developer whose factor is known to be 12, it is found that the first



PORTRAIT OF MISS G.
CHARLES HENRY DAVIS, NEW YORK

appearance of the image occurs 16 second after the developer is applied. Then 16 times 12 gives 192 seconds or practically 3¼ minutes, the time required for complete development.

This factorial method has many drawbacks and the writer does not recommend its general use. With an overexposed plate the image may appear almost immediately after the developer is applied and if the factorial method is used, development will be stopped too soon. With an underexposed plate, the reverse is true; the image may not appear for some time after applying the developer, resulting, if the factorial method is used, in overdevelopment. Often with correctly exposed plates, one view may contain bright highlights which will appear before any other part of views, again resulting, when the factorial method is used, in incorrect development. Also, with the same developer, different brands of plates may show different factors, while changing the dilution of the developer or the temperature may also change the factor.

Development carried out by the time and temperature method will result in uniformity of negatives, producing perfect negatives with correctly exposed plates, and with underexposed or overexposed plates the best negatives possible under the circumstances. As there is no need for inspection of negatives during development, the process may be carried on in absolute darkness if required. It will also be possible to adjust the process so as always to obtain any desired degree of contrast to suit one's particular taste or to accommodate any special printing process.

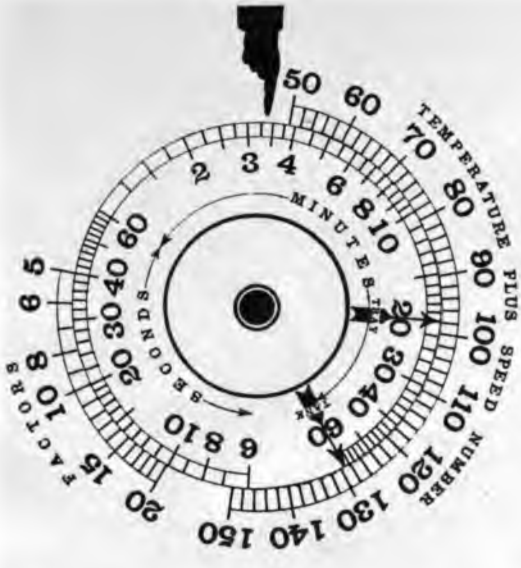
There have been several time and temperature methods proposed, but they may be roughly divided into two classes; in one class the *time* of development for different plates at the same temperature is always the same, the dilution of the developer being varied for the different plates. In the other class, the *developer* is always used at the same strength, the time being varied for the different plates. With the time and temperature method I am describing, the developer is always used at the same dilution for tray use, and always the same for tank use, the tendency of different brands of plates to develop faster or slower being taken care of by a development speed number previously determined. The tendency of a plate to develop rapidly is indicated by a high speed number, while the tendency to develop slowly is indicated by low speed number. When this speed number is once determined for any brand of plate it need never be varied, unless for some special reason one desires to change the degree of contrast, in which case decreasing the speed number will give greater contrast, while increasing the speed number will give less contrast.

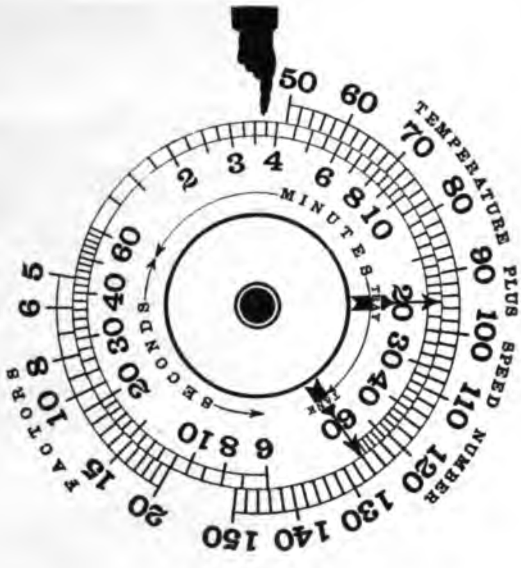
In order to facilitate the determination of the proper development time by the use of the speed numbers the development calculator illustrated herewith has been prepared. It may be made by pasting Figures 1 and 2 on a piece of fairly stiff cardboard, then cutting out the disc Figure 2 and mounting it by means of a rivet or eyelet so that the center corresponds with the center indicated on the rectangular piece Figure 1, and so that the disc may be rotated on this point. To use the calculator, the previously determined speed number is added to the temperature (in degrees Fahrenheit) of the developer, and the disc on the calculator turned until the tray or tank index arrow, depending on the dilution of the developer, points to this sum. The hand will then point to the time required for development, this being the total time the plate should be in the developer solution. The speed numbers for most makes of plates and films will range from about 25 to 40, those for roll films being somewhat lower. These speed numbers will give negatives which print well on medium grades of gaslight paper and which will enlarge on bromide or other enlarging papers. The appended table of speed numbers should be used

OTIS SKINNER IN CHARACTER CHARLES HENRY DAVIS, NEW YORK

only as a guide and each operator should make his own table to suit his own particular requirements.

Determining speed numbers is not difficult, and, as the average photographer uses comparatively few different brands of plates or films, it is easily done. To determine the speed number, take a plate or film which has been given, as nearly as possible, the correct exposure, and develop it with the developer properly diluted for tray or tank, as the case may be, noting the developer temperature. Carry development to what appears to be the correct point, determining this by any method the photographer is in the habit of using, and note the total time the plate is in the developer. Now turn this disc on the calculator so that the hand points to the development time found by the above trial. The proper index arrow will then point to the sum of the temperature and the speed number. Then if the temperature of the developer is subtracted from this sum the result





will be the speed number which is to be used in the future for that brand of plate. After the negative is finished and a print made, one can decide whether development was correct, too long, or too short, and vary the speed number accordingly in another trial. Usually two or three trials should definitely determine the speed number for any brand of plate.

Suppose, for instance, that with a certain brand of plate it was found that 3¾ minutes were required to correctly develop the plate in the tray to the required density when the temperature of the developer was 65 degrees. Turning the disc on the calculator so that the hand points to 3¾ minutes, the tray index arrow will be found to point to 95. Then 95 less 65 (the developer temperature) will give 30 as the speed number of that plate, which should be used in the future for all plates of the same brand.

The calculator must only be used for determining development by the time and temperature method when the developer is compounded after the formula given herewith, which is for the well-known pyro-soda developer, which is in almost universal use and one of the cheapest to prepare. It has good keeping qualities, but we do not recommend mixing up more than about one month's supply at one time, although we have repeatedly used developer much older than this with good results. The impurities in the water and the amount of air in solution affect the keeping qualities to a great extent, the sulphite solution being particularly subject to spoiling, which will result in stained negatives. With any developer, the best results are always to be obtained when the solutions are fresh. Boiled or distilled water may be used when preparing solutions, but unless the water supply is very bad this is not necessary. As a rule, if the water is fit for drinking it will be suitable for making up the solutions. The water for diluting the stock solutions just before use should have stood in the dark room long enough to have attained a constant temperature, as otherwise the temperature may change during development, although seldom, except with the tank, enough to materially affect results. The 4 oz. of developer for tray use is sufficient for a 5 x 7 plate and the quantity shown for tank use is correct for the 5 x 7 Eastman plate tank. If different quantities are required they should, of course, be diluted in the same proportion.

NOCTURNE P. A. DIETZ

The developer to be used with the calculator is compounded as follows:

Stock Solution A	
Water about	8 oz.
Potassium metabisulphite	55 gr.
Potassium bromide	7 gr.
Pyrogallic acid (pyro)	330 gr.
Water to make	16 oz.
Stock Solution B	
Sodium sulphite (dry)	600 gr.
Water to make	16 oz.

Stock Solution C

Sodium carbonate (dry)	425 gr.
Water to make	16 oz.

For use in tray take

Solution A	3 dr.
Solution B	3 dr.
Solution C	3 dr.
Water to make	4 oz.

For use in tank take

Solution A	2 oz.
Solution B	2 oz.
Solution C	2 oz.
Water to make	64 oz.

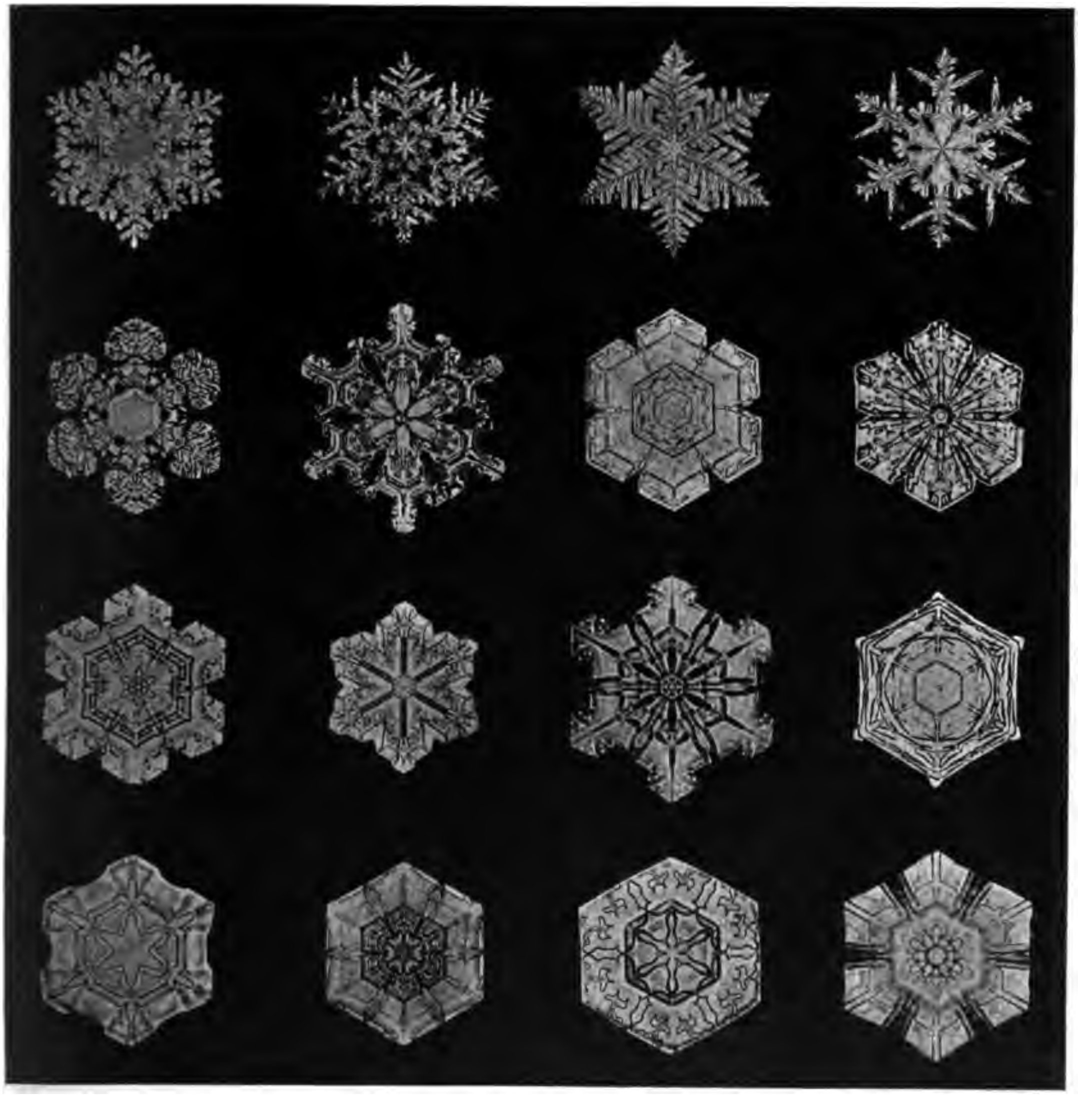
Always use the developer immediately after mixing the stock solutions and water together, as it will not keep when mixed. Always use fresh developer for each tray or tankful of plates. Do not try to use the developer a second time, as the chemicals which have been dissolved from the plate during the first use will affect the time and quite often the color of the negative. Even with present day retail prices for chemicals the cost of sufficient developer for one 5 x 7 plate in the tray is only about one cent and it would be poor economy to run the risk of spoiling a plate costing some ten times this amount by using the developer a second time.

While not recommended for general use the calculator may also be used with the factorial method. For this purpose set the disc so that the time required for the first appearance of the image is opposite the known factor of the developer and the hand will then point to the total time required for development. The calculator shown in Fig. 3 B is set for the following data.

Factor	11
Time for appearance of image	18 sec.
Total development time	3 min. 20 sec.

When using the factorial method the calculator may be used with any developer, providing the factor is known. With the pyro developer compounded after the formula given above the factor will be found to be about 11.

After many years experience in developing plates and films, and after experimenting with a great number of development methods, the writer unqualifiedly recommends the time and temperature method of development as being the most accurate that he knows of. The photographer of small experience can make no mistake in adopting it, while the photographer of somewhat more experience will probably be surprised to see the difference in his work if he will abandon his inaccurate methods, and adopt the time and temperature method for determining the developing time. The writer believes that the trend is more and more away from the slipshod, hit-or-miss methods of former days, and that there is a definite tendency toward precision in all photographic operations from the calculation of the exposure to the making of the finished print. If solutions are compounded with reasonable care, a strict adherence to the time and temperature method as shown by the calculator will be found to give uniformly good results, eliminating all tendency to overdevelop or underdevelop, even when the plate has been improperly exposed.



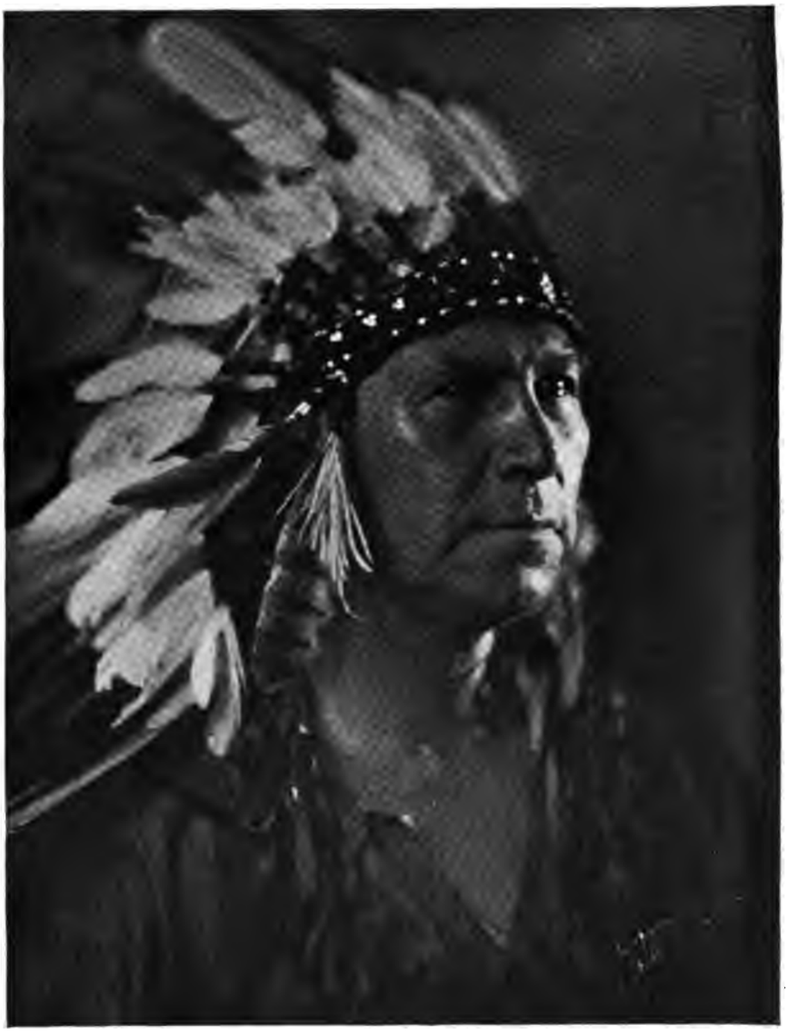
for new snow gems, to develop the plates, to have the thrills of inexpressible delight at seeing them for the first time, to be the *first* one in all the world to view these newest creations of the snow artist. And the greatest pleasure of all is the thought that their exquisite likenesses are preserved in the photograph for all time, for others to see and enjoy. Yet the hardest work of all comes after the photographs are taken, for there seems to be no purely photographic method of portraying them naturally, white on a dark ground, as they appear in nature. The reason is that the body of the snow crystal is transparent, like glass, and appears of the same shade as the background, whatever that may be. To show them white on a dark ground it is necessary to use the tedious blocking-out process, by cutting and scraping off the film from around the image. The original negative is usually left intact, as a proof of the correctness to nature of the work, the blocking-out being done on a copy negative under a microscope. A penknife is first used, tracing a mark around the image, then a larger blade to remove the first shaving outside this line, and a broader blade yet to scrape off the circle around the image. Oftentimes hours of patient labor are required to block out one of the branching forms. The writer has doubtless spent a year or more of his life doing this tedious work. But any work is eminently worth while provided it serves to help portray in a natural manner, as this does, these matchless gems from on high. The experiences of the enthusiast in this unique line of endeavor are varied and full of interest. One's love for the work robs grim winter of much of its terror; one can actually look forward with keenest pleasure to the coming of the winter storms and find such absorbing pleasure and interest in the search for snow gems as to forget for a time the biting cold, the worries of life and business, and even the coming of meal times and hunger. Yet it has its almost heartbreaking tragedies, for, occasionally a choice specimen will slip on the glass slide while the exposure is being made and come out blurred in the negative, or one may fracture an exquisite specimen in trying to pick it up or to arrange it properly on the glass slide, and then one's grief and disappointment are keen and lasting, for never again, search as long as one will, will one find one exactly like the lost specimen. Then, again, the temperature may be a degree or two too high when perfect forms are falling, or night may close down and one can only look out despairingly at the falling flakes — an infinity of beauty going to waste — unable to save and preserve even one of the glittering hosts that fall.

THE VIGOR OF PRINTING PAPERS

J. RONSON HALL

THE average photographic negative, in its relation to the scene or subject it represents, has no definite or truthful scale of gradation. Neither has it any definite degree of falsity, such as might be predetermined in the deliberate making of pictures softer or more vigorous than their originals. This need not be so, for by accurate and scientific development it is possible to make negatives of any required "gamma" or contrast, granted that their exposures are within the latitude of the plates. But this possibility is not much consolation to the printer who must take negatives as they are, and in order to get prints which represent either the subject's scale of gradation truthfully, or else with a required degree of falsity, we must resort to a plurality of printing emulsions, some of which are capable of giving a false rendering of scales of illumination which act on them. In this way two false scales can be brought together to produce either a true scale or a scale in the print.

The success of any such combination and the quality of the result depend largely on the selection of the paper for the particular negative. In pre-bromide days, a printer was usually tied to one grade of paper, and a negative that had not the right scale for the paper had to be doctored or dodged in an endeavor to get passable prints, or else prints that were very soft or very harsh were turned out. Some fifteen years ago, I noticed that different makes of P. O. P. were not alike in their contrast-giving properties and this observation led me to adopt a selection of brands calculated to cover the various types of negatives I had to handle. My first experience of bromide emulsions was similar, and to get equally truthful or desirable results from different negatives I had to use different makes, which entailed considerable experimenting before the most suitable makes were found. Today, at least two different grades can be obtained in most brands of paper



PASSAMAQUODDY INDIAN **JARED GARDNER**
First Prize, November Senior Competition

and this simplifies matters to some extent, but after handling wholesale quantities of various makes of both bromide and gaslight papers, I am convinced that this matter of gradation scale, or vigor, can be simplified yet further.

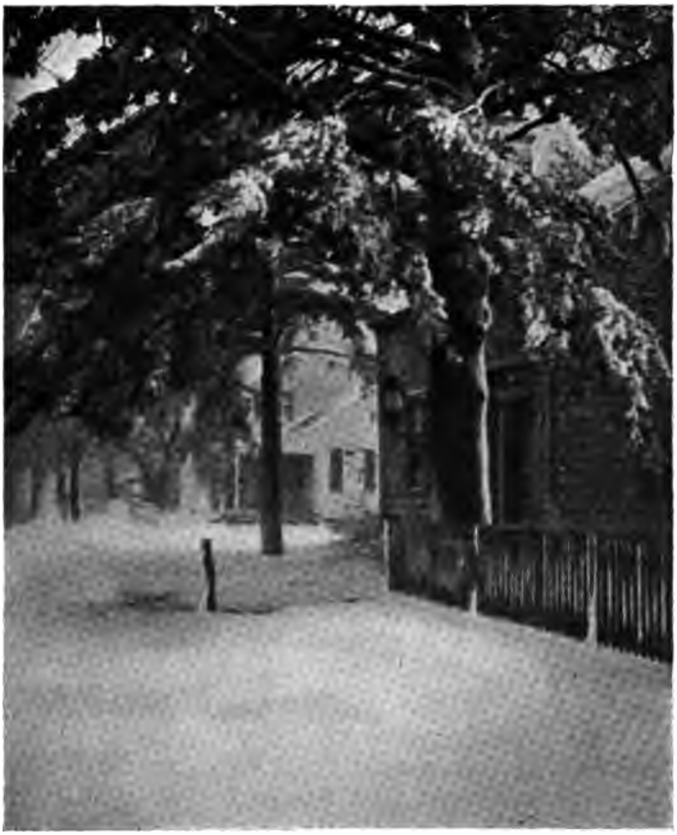
It is some time since I have handled American papers and so I cannot speak with certainty of them, but the general practice with British manufacturers is to label the different grades as "soft" and "vigorous," other terms such as "portrait," "normal," "ordinary," and "hard" being used by some makers. Printers understand the terms "soft" and "portrait" to imply that the paper so labeled will give a softer result than that labeled "ordinary" or "normal" will, from the same negative, while that described as vigorous or hard will give a more contrasty picture. Just what degree of vigor or contrast is likely to be given by any grade from any particular type of negative is not even hinted at, and the emulsion called "soft" by one maker is not equivalent to all other "softs," the same thing applying to "ordinaries," "normals" and other grades.

ALICE L. A. MORSE

Second Prize, November Senior Competition

The printer thus finds himself in the same position as an operator who can obtain plates labeled "fast" or "slow," but has no means other than familiarity with a brand, of knowing whether the H. & D. number of either is 10 or 500. Operators however are better looked after, every grade of plate being described with a speed number.

I have suggested to British manufacturers that a system of designating in numerals the degree of vigor possessed by a paper would greatly assist consumers in their selection of the grade or grades they really require, and help forward a proper understanding of the selection and use of grades. Some manufacturers and many expert consumers agree with me, while some makers maintain that the provision of two grades labeled simply with words is quite sufficient. A method of examining the exposure range of a paper was explained some little time ago in a leading British paper, the range being the relation of the least exposure capable of appreciably affecting the emulsion to the least exposure necessary to produce a full black with normal development. The softer the emulsion, the nearer the relation or the shorter the range, and vice-versa. I have elaborated on this



WHEN DRIFTING SNOWS LIE ON THE ROAD

WM. S. DAVIS

In any subject showing a noticeable amount of sky, the matter of relative tonality must be considered with reference to other parts, since the tone of the sky affects the apparent intensity of the highlights and depth of the darker portions. As tonal relationship is very largely controlled by the direction and quality of lighting, one cannot well be considered independently of the other.

On a grey day, when the sky is overcast, the effect of shadows and reflected light is reduced to the minimum and the natural differences in tone between parts of a scene — what artists call "local color" as distinct from such changes as are caused by lighting and atmospheric influence—are most clearly defined. Even in diffused light, however, the sky may vary a good deal in depth, from a milky white in hazy weather (approaching the snow in value) to an inky blue when a storm is approaching. Aside from a difference in tone due to the presence of clouds, any section of the sky well away from the sun will appear darker contrasted with the snow than when a similar subject is studied while the sun is in front of the observer, this difference being particularly noticeable on clear days while the sun is low.

As the feeling of luminosity in the snow is dependent upon contrast with other parts, it is evident that the tone of the sky plays an important part in the effect produced, for, if this happens to be as light in value as the snow when the exposure is made, the repetition of tones will prevent placing the accent of light where it belongs, upon the snow portion. For this reason it is generally advisable when working against the light to select material which can be so composed as to exclude most or all of the sky, unless the latter contains suitable clouds.

Differences due to the angle and direction of illumination are most noticeable on bright clear days, when lights and shadows are well defined. This is felt in many ways, one being the rendering of textual quality in the surface of the snow, which is best brought out when the sun is comparatively low in the sky, and either at one side or in front of the observer. The same illumination is also most favorable for the production of striking cast shadows.

Ordinarily, the highest lights on a clear day will be found in the sunlit portions of the snow, the tone of the blue sky being distinctly darker than these, but somewhat lighter than the shadows of objects cast upon the snow.

There is a tendency for the tones in a winter scene to fall into two separate groups; the sky and snow constituting one at the light end of the scale, while such objects as trees and buildings stand near the other end. When this is noticed, it is desirable in the interest of harmony to have either the light or dark group predominate. By so doing, the tones which occupy the lesser space in the composition will serve to accent, instead of competing with, the others, this being one of the features of space division in the illustration "Over the Creek."

When differences in the local color of the several parts furnish all the variety of shapes and tonal gradation desired, a diffused lighting is the proper one to choose, but a subject which appears uninteresting under such conditions should never be condemned as worthless, since many of the most beautiful effects are dependent upon transient combinations of light and shadow, only present in good sunlight. Such is true of a foreground of level snow, which of itself would be insufficient for a picture, but is transformed by a pattern of blue-violet shadows cast by a tree or an old fence, as in our example called "Sunlit Snow." Even when cast shadows are not an essential feature, the quality of lighting found only on clear days may be necessary to bring about the best combination of tone values. This is usually true in the case of snow-covered trees against a background of sky, but whereas cast-shadow effects may be seen at their best by looking somewhat against the light, a snow-covered tree will only present desirable contrast with the tone of the sky when the sunshine falls upon it.

Constant observation of such variations as those referred to, and many others, not only enables a worker to produce successful results with a greater degree of certainty, but is one of the ways available for making everyday surroundings more interesting.

Apparatus and Material. — A hand camera, if rightly used, is capable of giving very good results, but will prove most useful for securing street scenes with traffic, stormy-day effects when the wind is driving the falling snowflakes in swirling clouds, and other subjects which are more difficult to obtain with a tripod outfit, but when it is possible to use the latter advantageously, most pictorialists prefer to do so, owing to the greater certainty of arranging the details of a composition as desired, and the opportunity afforded of controlling the quality of definition by manipulation of diaphragm and focusing pinion. A folding plate camera of medium size — 4 x 5 or 5 x 7 is better than a larger instrument when one is wallowing through high drifts and soft snow on a long tramp — together with a stiff, though not necessarily heavy, tripod makes a statisfactory equipment for straight landscape work.

When a choice is permitted, the kind of lens used will doubtless be determined by the taste of the worker, so about all I will suggest is the desirability of using one of fairly long focus in relation to the size of picture.

OVER THE CREEK — WM. S. DAVIS

There are two accessories which should never be omitted from the kit of the winter worker: a lens-shade and one or two ray-filters. The first is needed to protect the lens from the glare of light reflected from the snow on bright days, which if not cut off, frequently causes veiling or fog in the negative. A shade is also useful in stormy weather to keep the lens clear.

For most purposes what is commonly listed as a 3-times ray-filter is deep enough to hold the blue and violet tints of sky and snow shadows, respectively, in approximately correct relation to other parts of the scene, but when very dark objects appear in the foreground amid a setting of sunlit snow the increased correction afforded by a 6- or 8-times filter will prove of assistance in retaining gradation in the lighter passages while an exposure long enough to record the deepest tones is given.

Care should be taken, in handling lenses and ray-filters when afield, to guard against a film of moisture freezing on the surfaces of the glass, thus dimming the image. If kept perfectly dry this will not occur, but even the warmth and moisture of one's hand is sometimes sufficient to cause condensation, for which reason the lens or filter should be picked up by some portion of the mounting well away from the optical surfaces. When moisture has settled on the glass, gentle application of a soft handkerchief will remove it. Owing to the amount of condensation which takes place on practically every part when the outfit is brought into a warm room, it is well after a trip to open up the camera and let the moisture dry off slowly before putting it away.

The necessity of good color values points to the use of color-sensitive emulsions, and in the case of plates double-coated orthochromatic grades are especially recommended, as their great latitude in the matter of exposure makes it possible to record a very long scale of tones. For snap-shot work, where the longer exposures which the use of a ray-filter necessitates cannot often be given, one of the well-known varieties of plates which contain in the emulsion the equivalent of a light yellow filter will be found good. Such plates may also be used with a ray-filter over the lens, the same as regular orthochromatic grades, when additional color correction is desired.

FOCUSING AND EXPOSURE. — Where a hand camera is used, the image is generally focused as sharply as circumstances permit, any diffusion which is desired being introduced when making the print, but this does not give one control over the degree of definition in different planes of the subject, such as can be got by observation of the image upon the focusing screen and regulation of the depth of focus by altering the size of the aperture to suit the effect wanted.

Just the amount of diffusion to introduce in the rendering of a snow scene is rather a nice point to decide. A mist or snowstorm effect may be helped by some diffusion in all parts, but more caution is necessary when dealing with a crisp sparkling subject, as anything bordering upon "mushiness" in the image is entirely out of keeping with the characteristic quality of such scenes. Even in these, it is often desirable, after securing reasonably sharp focus upon the principal feature, to subdue the definition in the background enough to make the details unobtrusive, and at the same time increase the feeling of separation between planes. In this connection it may not be out of place to call attention to a fact which seemingly is often overlooked, that blurring of the image alone will not overcome harshness caused by false tonality, consequently one should always consider values first. If these are delicate in quality, a small amount of diffusion in the receding planes will be sufficient to emphasize the atmospheric effect and suppress superfluous detail.

Under ordinary circumstances, a correct exposure is one which records the full scale of tones upon the film, from highlights to deep shadows. When this scale is comparatively short, as is usually the case in dull lighting or in a subject composed wholly of snow and sky, the matter of timing is easy, for if approximately right a good printable negative should be secured. As the purpose of the ray-filter — as previously mentioned — is to restrain the over-active blue and violet, equalizing their action upon the sensitive film as compared with other colors, it is not so imperative to employ one on a grey day when bright tints are absent, though it is, even under these conditions, sometimes a help to do so. When in doubt, it is a good plan to make two exposures, with and without a filter, respectively, examination of the results adding much to one's personal knowledge of when to use the filter. On bright days it is always easier to retain the more delicate gradations on the surface of the snow when a filter is on the lens, and when dark objects are present it is nearly or quite impossible to obtain satisfactory quality in all parts without one, since under these conditions one must trust to the latitude of the emulsion, combined with the retarding action of the filter upon the tints found in the lighter portions, to preserve these while giving the extra exposure necessary to penetrate the dark tones. Where there are only a few small spots of very dark tone in the composition it would not, of course, be wise to overexpose the rest of the subject, since a small area which comes out too dark can be retouched in the finished negative.

It is difficult to give definite data as to the actual exposures called for which could be accurately applied, though the information appended to this article concerning the production of the illustrations may serve as an approximate guide to the reader when dealing with subjects of similar character.

An exposure meter, or reliable set of tables, is useful in calculating the time, but in

HER BEAUTIFUL HANDS
Charles Henry Davis, New York

many instances the indicated time can only be accepted as a basis, and must be modified according to one's best judgment to fit a particular subject. For example: the makers of meters using sensitive paper to measure the intensity of the light advise giving one-quarter of the dial reading for snow scenes, which is sufficient for a very open view without dark objects, but when strong contrasts are present the full indicated time will not be too much.

Another point worth mentioning regards the multiplying factor of ray-filters. Owing to the fact that the filter helps to prevent flattening of the highlights by overexposure, the writer has found it beneficial when strong contrasts are met with to give at least five time increase over the normal unscreened time when using a filter commercially rated as a 3-times grade, and a proportionate allowance with any other, thus making sure of the shadows receiving ample exposure.

DEVELOPMENT. — If the exposure has been rightly timed, the shadows of the subject will contain enough detail and gradation by the time the highlights have acquired sufficient printing strength when using any normal soft-working developer, such as would give a well-graded negative of any other subject. What should be aimed for is a moderately thin negative in which all the gradation visible can be transferred to the print, but with sufficient crispness in the highlights to prevent a brightly lighted subject from looking flat. Correct printing density depends upon arresting development at the proper moment. If the shadows in a properly developed negative lack tonality — in other words, are nearly clear glass — it is proof of underexposure, while too much flatness in a reasonably dense one may be laid to overtiming, or failure to use a ray-filter when needed.

To insure normal action of the developer, don't forget to keep the temperature of the solution up to 65-68 degrees, using a thermometer for testing.

PRINTING MEDIUMS AND MOUNTING. — The average worker who is not prepared to take up the various pigment-processes or platinotype will find in bromide, or the softer grades of slow developing paper, a medium capable of giving a very satisfactory rendering of snow effects. The white matt and rough surfaces are especially well adapted to the rendering of snow texture, while the semi-matt surface, having a slight sheen, may sometimes be employed effectively for small prints of subjects full of sparkling detail in the lighter parts. The exposure of the paper should be so timed as to allow of complete development taking place, thus securing an image of a neutral grey or blue-black color.

Plain mounts of liberal margin in shades of light grey will emphasize the luminosity of the snow and harmonize well with the character of the subject. If it appears desirable to separate the edges of the print more distinctly from the mount, a narrow border-tint of the same hue as, but a shade or two darker than, the latter can be used as an underlay for the print. Over-elaboration should be avoided.

NOTES AND TECHNICAL DATA. — Those who own a projection lantern will find good slides of snow subjects among the most effective subjects which can be thrown upon the screen, the production of the large image in actual light and shadow being conducive to the appearance of luminosity in the snow to a greater degree than is possible in a print upon paper.

The presentation of our theme as stereographic views also gives very realistic record pictures, the delicate details of frost-covered bushes, and the like, standing out most vividly as a result of binocular vision.

The technical details pertaining to our illustrations are as follows: —

"Sunlit Snow." January day about 1 P. M., clear sunshine. Exposure 1 second, stop *f*:16, single achromatic lens of about 6½ inches' focus, with Ingento series A ray-

MORNING WORSHIP — SOTARO SABA

Third Prize, November Senior Competition

filter (listed as a 3-times grade). Cramer Inst. Iso. plate, 3¼ x 4¼.

"Where Winter Winds Have Piled the Snow." Made in February at 1 P. M. in a diffused light. Exposure 2 seconds, with 3-times filter, 13-inch focus rear combination of a convertible R. R. lens used at the marked aperture of *f*:11, equal to approximately *f*:20 for the single element. Wellington Anti-Screen Plate, size 4 x 5.

"Over the Creek." Taken in a cloudy bright light at 2.45 P. M. Exposure 1½ seconds, using 10 inch rear element of an Ilex anastigmat wide open, giving an effective aperture of about *f*:10. Royal 8-times filter, Roebuck D. C. Ortho. plate, size 4 x 5.

"When Drifting Snows Lie on the Road." Made in April during a thick snowstorm at 5.15 P. M. Exposure 1-25 second, 6-inch focus anastigmat used at full opening of *f*:6.3 Roebuck D. C. Ortho. plate, size 3¼ x 4¼. No filter.

MOUTHS IN PORTRAITURE

N. E. LUBOSHEY

MR. N. E. LUBOSHEY introduced the subject of "Mouths in Portraiture" by saying that, perhaps after the eyes, the mouth was the most expressive and important feature of the human face. He quoted a famous French physiognomist: —

"Whatever is in the mind is communicated to the mouth.

"Every mouth which is as broad again as the eye denotes dullness and stupidity.

"Disproportion between the upper and lower lip is a sign of folly or wickedness.

"Very large, though well-proportioned lips, always denote a gross, sensual, indelicate, and sometimes a stupid or wicked man.

"In proportion to the cavity in the middle of the under lip, in a person not otherwise deficient in signs of intellect, is the fancy, the sarcastic wit, the coldness of heart, and the watchful cunning.

"When in a person who, in other respects, exhibits proofs of intellect and of a powerful character, we find, not far from the centre of the middle line of the mouth, an opening, which scarcely closes, and suffers the teeth to be seen, even when the mouth is shut, it is a sign of cold, unmerciful severity and contemning malignity, which will seek its advantage by injury to others.

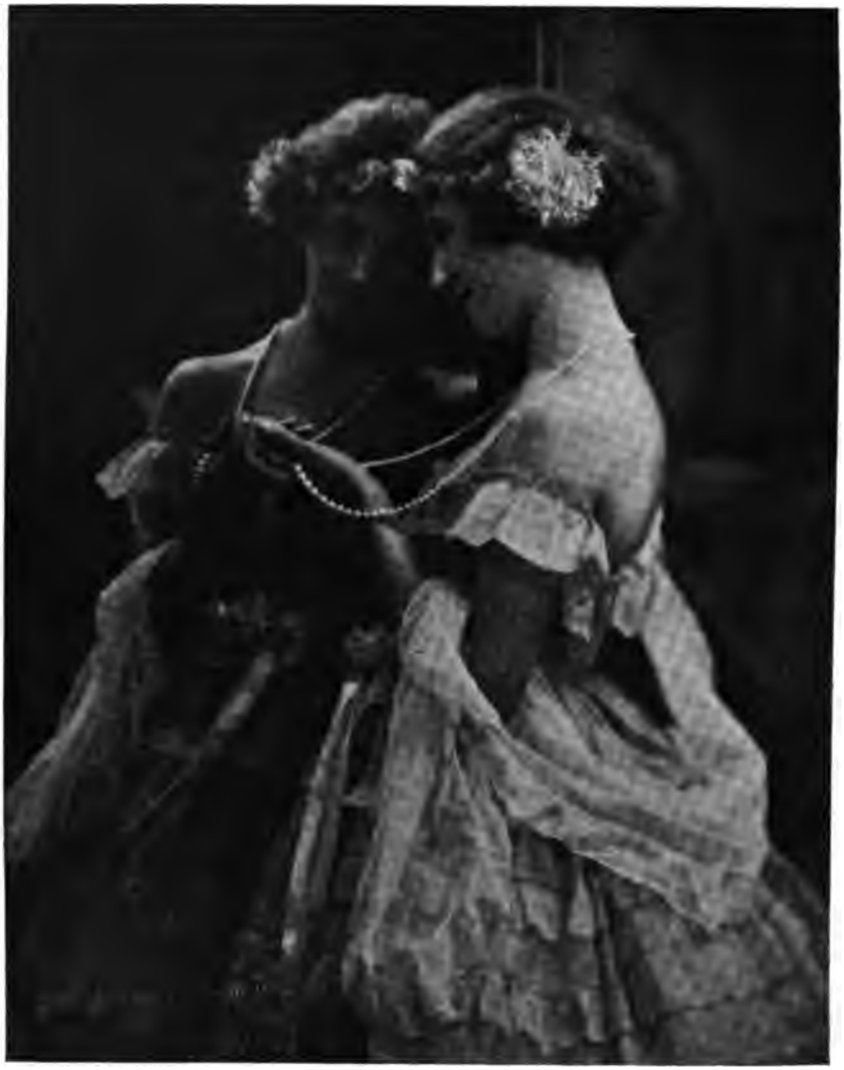
"He is certainly of a base and malignant disposition who laughs, or endeavors to conceal a laugh, when mention is made of the suffering of a poor man, or of the failings of a good man. Such characters have commonly little upper or under lip, a sharply-delineated middle line of the mouth, which at both ends turns disagreeably upwards, and fearful teeth!"

Mr. Luboshey pointed out, by aid of the numerous portraits and drawings exhibited, how the mouth was expressive of sadness, astonishment, horror, admonition, physical pain and mental pain, and also how the lines descending from the nose to the corners of the mouth played an important part in this expression. These lines were usually retouched out of existence by the retoucher who had not received some training in drawing from the human figure.

An examination of a series of portraits of men known to photographers showed that their characteristic dispositions were revealed mainly by the lips and the associated lines.

What were photographers to do to conceal, emphasize, or subdue these characteristics? Strive to obtain such exposure and development of the plate so as to get a perfect balance between the highlights, half tones, and deepest shadows. This was the secret of success in the work of the old masters of portraiture. It is difficult to say where we stand in modern portraiture; we have more variety in lighting effects, less retouching and better taste, but we lack expression in the individual features because we cannot draw, and do not realize their subtlety. We must endeavor to obtain more delicacy of modeling in the highlights, and in this respect the use of panchromatic methods is advisable.

Mr. Luboshey referred to the work of two prominent photographers. Perscheid was not successful in photographing ladies: they never came to him with natural skins, and he obtained his results by subtle lighting and tonality. Pirie Macdonald obtained his effects by strong lighting and by contrasts. Lighting may exaggerate or subdue those irregular characteristics to be found in the features of most persons, in the former case producing a



VIRGINIA
CHARLES HENRY DAVIS, NEW YORK

caricature. Rarely is the line of the mouth parallel to the line of the eyes: the teeth, position in sleeping, and the predominant emotion causing an irregularity in development. A satisfactory lighting was that which fell at an angle of 45° to the horizontal plane; this produced shadows from the nose which modified the highlight upon the lower lip, while with an inclination much greater the whole of the lower portion of the face was thrown into shadow. This variation in shadow could also be secured by an alteration in the inclination of the head which at the same time affected the curvature of the line of the mouth. Approach to or recession from the source of light had a considerable effect upon the length of these shadows, and it was upon a combination and consideration of these conditions that a desirable result could be obtained. These effects were ably demonstrated by the lecturer, who utilized a single light in the room and acted as his own model.

Mr. Luboshey preferred his sitters to talk so that he might secure an expression with some animation and character, and in the case of strangers, his first impression of them was the one he wished to depict. To concentrate on his aspect of portraiture it was necessary to have the technical operations at one's finger ends, so that the opportunity be seized without any distractions of apparatus. — *The Photographic Journal.*

THE CASE OF THE "READY-MADE" DEVELOPER

FREDERICK C. DAVIS

THAT there is a large and constant demand for tubed developers and other "ready-made" reagents is testified by the continual manufacture of them. In truth, when one travels, the prepared developer is a salvation. When the photographer works away from his darkroom, the prepared chemicals are veritable boons. Too, the prepared reagents are indispensable to those who do not use the solutions frequently. Those who do not possess scales for weighing their own mixtures must, of necessity, depend on the tubed reagents. All these things, and many others, are excuses for the existence and use of the "ready-made" reagent, which fills a definite purpose and need.

But it is not always best to use tubed developers, handy as they are. Certain advantages come of mixing one's own solutions. The time and trouble necessary for weighing the chemicals is negligible; with a reliable formula and a reliable set of scales anyone may compound as trusty developers as any veteran photographer; and if one has no scales, the cost of a new pair will in a short time be compensated by the consequent saving of chemicals; and after that it means a continual saving of money.

Nor is an extensive variety of chemicals necessary, nor great amounts of each. Let the amateur buy one pound each of sodium sulphite, sodium carbonate, powdered alum, and acetic acid, one ounce each of pyro, metol, hydrochinon and potassium bromide, and five pounds of crystal hypo. He will then have all the chemicals necessary for developing and fixing films or papers and, at present market-prices, at a cost of about $3.00. If it is wished, half a pound of each may be purchased, instead of one ounch each, of pyro and hydrochinon. The chemicals named, and their quantities, are a generous supply for an average user. The developing agents, though, may be altered to suit the preference.

"Ready-made" developers sell for about five cents per tube or packet, but more often the cost is ten cents. We will estimate seven cents as a fair average. Acid hypo sells for thirty-five cents a pound at this writing. The average tube of developer powder is suffi-

TREES
CHARLES HENRY DAVIS, NEW YORK

cient for eight ounces of solution; and the pound of hypo dissolves in one gallon of water to the correct proportion. Eight ounces of this are usually used at a time; so the average amount of solution used in each case is eight ounces.

Presuming the reader uses a film-tank, and taking a 3½ inch tank as an average, the developer-formula is:

Pyro	22 grains
Sulphite	44 grains
Carbonate	44 grains

Told in cents, the cost is:

Pyro	$.0200
Sulphite	.0022
Carbonate	.0015

The total cost, then, of a self-mixed pyro-soda developer is about two cents; this is a saving of at least seventy per cent over the "ready-made" developer.

The formula for paper-developer is this:

Water	8 ounces
Metol	3 grains
Hydrochinon	12 grains
Sulphite	44 grains
Carbonate	44 grains
Potassium bromide	8 grains

Tabulated in money

Metol	$.0051
Hydrochinon	.0067
Sulphite	.0022
Carbonate	.0015
Bromide	.0036
	$.0191

Eight ounces of paper-developer cost, then, when prepared by the photographer, about two cents, while they sell for seven and sometimes ten cents when already prepared. The saving, by mixing the developer constituents just before use, is approximately eighty per cent.

In the case of the pyro developer, the saving was over two cents on each tankful, while with the paper-developer, the saving was more than five cents on each eight ounces of solution.

Computing the cost of hypo likewise, I use this formula:

Water	64 ounces
Hypo	16 ounces
Sulphite	1 ounce
Acetic acid	3 ounces
Alum	1 ounce

In cents:

Hypo	$ .09
Sulphite	.005
Acetic acid	.05
Alum	.015
	$.16

PENNSYLVANIA STATION—NOCTURNE

Burton Wolcott

Members' Exhibition, The Camera Club, New York

Thus, a saving of nineteen cents is made on each gallon of hypo, or about fifty-five per cent.

By simply mixing one's own developer and fixer, one saves approximately ten cents on each roll of film developed and printed. This is equivalent to a ten cent reduction in the price of a roll of film, which is certainly nothing to scoff at.

This accuracy and split-hair computation may seem to be unnecessary; it may seem that the saving, which does not appear to be great, is made to appear too important. In settlement, here are more figures. Presuming that the amateur exposes about 100 rolls of film per year, or their equivalent, the saving is:

On film-developer	$2.00
On paper-developer	5.00
On hypo	2.50

Therefore the saving of one who mixes his own agents is about ten dollars per year. Some very desirable and useful apparatus may be purchased with the saving; or the photographer may make more photographs at the same cost.

Professionals "mix their own" for just one reason — it is much cheaper than buying "ready-made" preparations. The amateur should not forget that the fellow who buys "ready-made" agents pays for three things; the chemicals, the containers, and the labor necessary to assemble them correctly. The containers are useless to the photographer, his own labor is cheaper, and the buying of chemicals in larger quantities makes for efficiency. Although the "ready-made" preparations have their advantages, "mixing your own" undoubtedly saves money.

The photographer who begins to mix his own preparations may save even more than the amount mentioned above. The making of enlargements has been omitted, and that operation usually requires at least a quart of developer and an equal quantity of hypo. Also, the different chemicals can be purchased more cheaply when larger quantities are purchased at one time. For instance, at this writing a one-pound bottle of No. 8 acetic acid costs thirty cents, but a five-pound bottle costs only seventy-five cents — a saving of fifteen cents on each pound — an actual fifty per cent decrease in price. In the same way it is possible to purchase all the chemicals more cheaply in larger quantities. Also, the reader may be able to procure chemicals at prices lower than those on which my calculations are based. As an instance, I obtain crystal hypo for seven cents per pound, obtaining it from a photo-finisher who buys it in 100-pound barrels. My estimates quoted hypo at nine cents; the difference means an added saving of two dollars for me.

One disadvantage of "ready-made" developers lies in the inability to produce special effects with them. By proper alteration of the relative amounts of the chemicals of the developer, an underexposed negative may be saved, but the tubed developer makes it impossible to make things right by adjustment of the amounts of the chemicals. This is true of paper-developers as well as of film-developers. Especially when making sepia prints is the amount of bromide in the developer important, but it is impossible to alter the amount of bromide in the tubed developer except by adding *more* bromide — but if one wishes to *remove* bromide (by adding bromide-less developer) he finds himself unable to do so. In the matter of hypo, one must mix the full contents of the package if he is to be assured of the proper proportions of hypo and hardener constituents. The proportion of each chemical is fixed and unalterable in "ready-made" preparations, and so they are useless when special effects are desired. This is unavoidable, but it may be overlooked in view of the extreme advantages of the tubed developer on occasions.

NELLIE MC HERBERT J. HARPER
Third Prize, November Senior Competition

Of course, a set of scales is necessary for the proper weighing of the various chemicals. Any scales having graduations in grains and sensitive to one grain will do. The Rexo and Eastman Studio scales are the finest things for the purpose, for they combine accuracy with low price. These scales sell now for about four dollars each, but they will "pay for themselves" in less than half a year. And at the end of that time the photographer possesses scales and also a means of saving more money.

Care must be exercised in the keeping of chemicals. If sodium carbonate is exposed to the air for some time it loses water of crystallization, and so lessens in weight for a given volume. If dried carbonate is then used it is necessary to take less of it than the formula calls for, or the result will be an over-abundance of carbonate due to the decrease in weight of a given volume. Sulphite has a tendency to absorb moisture, as has potassium bromide, so the opposite is true of them. If the photographer keeps each chemical in a cool, dark place, and in brown-glass, well-corked bottles, there should be no change in the strength of any of them.

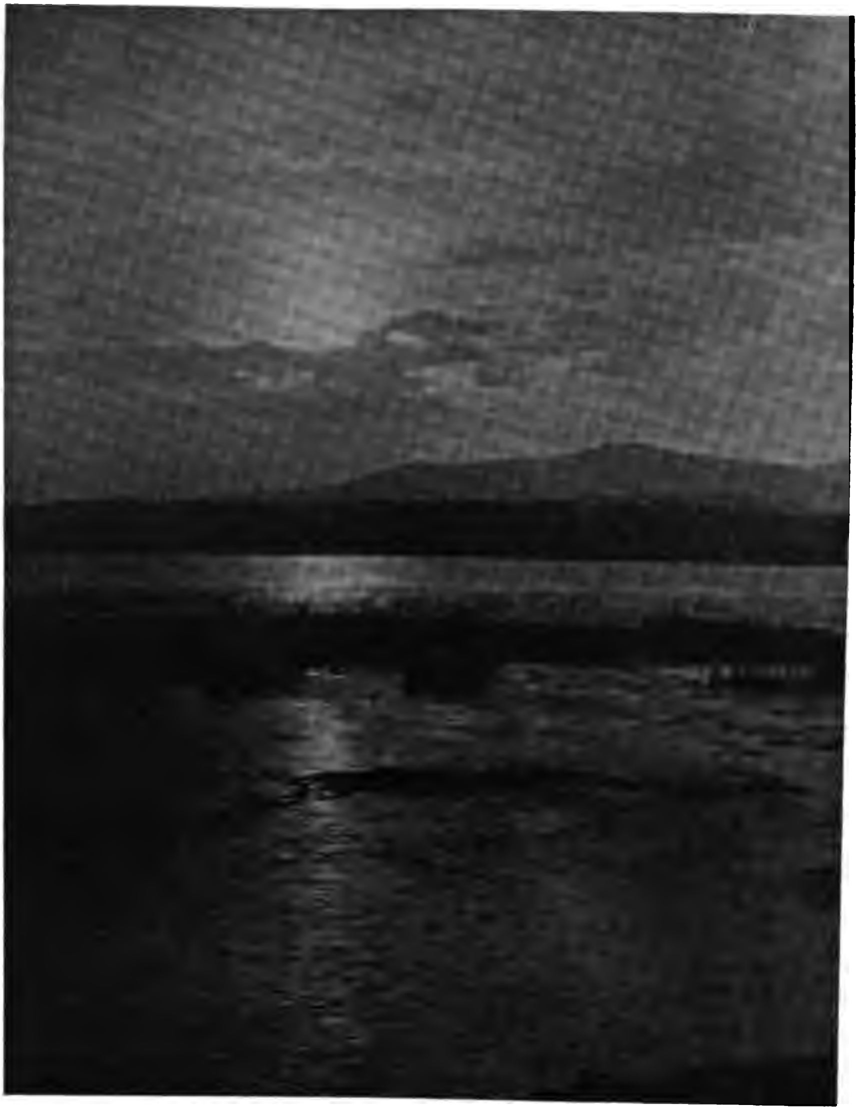
The photographer who begins to mix his own preparations will notice at once the real saving, because of the small quantities of chemicals required. The saving of money, together with the ability to produce special effects are the two main advantages of the practice. Added to that should be the knowledge gained of the offices and uses of each chemical, and what effect a change in amount of any one of them produces. While the practice of mixing one's own preparations cannot well be practiced when travelling or when away from one's darkroom, nevertheless it is a step forward in efficiency.

DIFFUSED LIGHT AND DIRECT LIGHT, AND SOME FACTS IN PRACTICE

MONTAGUE H. POPE

THE photographer, whether professional or amateur, requires to make the use of light his chief business or occupation. He uses light not only in conjunction with a lens in making negatives in the camera nor exclusively in the printing from negatives on sensitive paper. He is concerned with the practical management of light in many other ways than these, and, therefore, it is to his advantage that he should have a practical acquaintance with some of the properties of light as they apply to various photographic operations and apparatus. This, it need hardly be said, is a large field of knowledge, and, moreover, one which, unfortunately, is very little considered in the text-books on light which are available. In these notes my object is only to explore a very small portion of this field — in other words, to say something about the difference as regards practical usefulness in photographic work between light which is "direct" and light which is "diffused." Although these terms are in common use I believe that the essential facts which they represent are not recognized by many practical photographic workers. Some discussion, therefore, of the behavior of light in what we may term these two different forms may, perhaps, be of real usefulness in helping photographers to make the best use of apparatus or to adopt methods which are best adapted to a particular end.

As everybody knows, light travels in straight lines. The difference between light which is direct and that which is diffused does not lie in any departure from this law. Nor is it essentially a matter of strength or intensity of illumination. Obviously the diffused light from a clouded sky upon a surface may be more intense than that of direct rays from a lamp. We associate direct light with the casting of a sharp shadow, while in diffuse illumination no shadow of an object is to be discerned. That is the essential difference between direct and diffused light, and it arises from the fact that rays of light which have been diffused by passing through some medium or by being reflected from some surface progress in every conceivable direction (along straight-line paths) from every point of the transmitting or reflecting surface. In other words, light out of doors which reaches us through clouds or by reflection of direct rays of sunshine from the surfaces of clouds comes as a series of infinitely numerous rays radiating in all directions from each point in the cloud. That is a very different condition from the passage of light direct from the sun which, at its immense distance, is a very small source of light. In the one case we have large areas comparatively close to us sending rays in all directions; in the other, we have rays proceeding without obstruction from a source ninety-five millions of miles away.



ALONG THE HUDSON

BEN J. LUBSCHEZ

Members' Exhibition, The Camera Club, New York

This diffusion takes place whenever light is reflected from a surface which is matt or dull as compared with one which is polished, or whenever light passes through a medium such as ground glass or fabric which is not perfectly transparent.

In almost any street on a sunny day you can see a very good illustration of the characteristic action of a light-diffusing surface in comparison with one which, by its polished nature, reflects light sharply. The windows of many shops have affixed to them lettering of a more or less matt material. With the window in full sunshine a large volume of light is reflected upon the pavement by the glass, but in the case of the lettering the light is scattered in all directions, with the result that the pavement receives a lesser volume of reflected rays and the letters thus appear upon it darker than they do upon the surrounding surface.

One has only got to think for a moment, and it will be clear that it is through the agency of this diffusion or scattering of light in all directions from a matt surface that objects of any kind are visible to us. Rays of light are reflected from them in such an infinite multitude of directions that some inevitably reach our eyes. On the contrary, if an object is of a highly reflecting surface, *i. e.*, one which does not diffuse light in this way, it is visible to us only when we stand in just that position where the rays reflecting from it meet our eyes. You get a good instance of this very often in the country when suddenly a small window in a church tower will appear as a brilliant patch of light as the result of stepping into the path of the rays reflected from it. The difference of a few feet either way from this position will cause it to sink again into invisibility.

From all this we understand that without any departure from the law of a straight path, the effect of reflection from a diffused surface is to spread light in all directions — up, down, and on each side. Naturally, the intensity of the light reflected in any given direction is much less than that which would be produced by reflection from a polished surface. The latter reflects, roughly, the whole of the light falling upon it in one direction, while a matt surface spreads the same volume of the original light over a much wider area.

To come now to some of the applications of this common phenomenon in photographic work. One of the most homely is, perhaps, the safe-light in a dark-room lamp. Everybody, perhaps, recognizes, without precisely knowing why, that a dark-room obtains more general and comfortable illumination if the orange or ruby material in the dark-room lamp is not transparent like glass, but is of such a degree of semi-transparency that the shape of the light — electric filament lamp or incandescent gas mantle — cannot be seen through the safe-light. Clearly, if the safe-light is one of ruby or orange fabric or of dyed gelatin films with one or more thicknesses of tissue paper between them, the safe-light becomes a surface which scatters light over a much wider area than is the case if the rays from the source of light pass through a glass screen with no alteration other than that of removal of part of the colored constituents of white light. Another reason, too, of the greater comfort of semi-transparent safe-light comes into play. It is that the eye is in some measure relieved from the glare of the concentrated souce of light, with the result that its sensitiveness is greater, and it is better able to see distinctly in the weak orange or ruby illumination.

The same thing happens when the light in the dark-room is obtained altogether by reflection from a solid surface, although, of course, that is not a good kind of illumination for viewing negatives by looking through them. But for the development of prints and for generally being able to find anything in a dark-room this general diffusion of light is good and very efficiently obtained by fixing up any kind of box a foot or two below the

AUTUMN RIVER JOHN N. CONSDORF

Third Prize, November Senior Competition

ceiling, arranging the safe-light, either glass or fabric, on the upper horizontal surface, so that the whole of the orange light passes directly upward, and is reflected and at the same time largely diffused throughout the room from the white ceiling. As an adjunct to the ordinary lamp over the working bench, illumination of this kind is a great comfort in the dark-room, and it is surprising what a considerable degree of light can be employed in this way without any ill-effects in the way of fog upon papers or even plates.

Again, we can see the operation of this same spreading of light in the photography of interiors or in taking portraits or photographs of any objects in ordinary rooms. When the light outside is bright sunshine, or even when it proceeds from a comparatively clouded sky, the part of the room which chiefly receives the illumination is that immediately facing the window. Parts to the right or left are cast in shadow, which almost invariably proves very much deeper in the photograph than it appears to the eye. Experienced photographers of interior subjects know the advantage which results in the way of more equal distribution of the light by closing the space of the window with some diffusing medium, such as thin muslin. The use of such material amounts to the bringing just within the room of a new, though weaker, source of illumination, the rays from which spread on each side to a markedly greater extent than they do from the unobstructed window. This simple device is often the means of making a marked improvement in general interior views, particularly in cases where a window faces the camera, the muslin remaining in position for the greater part of the exposure, and being removed for the lens

HELPING GRAND-DADDY P. F. SQUIER
Second Prize, November Junior Competition

to be uncapped for a second or two at its termination. And the same improvement applied to indoor portraiture or to the photography of things like furniture, in regard to which a small part of the window may be left uncovered, in order to give such a (small) volume of direct light as may be necessary for the introduction of touches of strong lighting.

In the illumination of negatives for enlarging without a condenser we reply upon diffusion by both reflection and transmission. The illuminating-box sold for use with the Kodak Brownie enlarger is a good specimen of the application of this principle. The light (of a metal-filament lamp) is placed in a closed box of comparatively small size. Rays from it are reflected in a state of diffusion from the sides of the box and from its curved back, and are still further diffused by passing through the semi-transparent screen placed immediately behind the negative. Those who make illuminating-boxes for enlarging should not forget the very great diffusing effect which they can obtain by reflection from the sides of the lamp container. While materials like sheet opal produce a very high

SUMMER IDYL THEO M. FISHER

First Prize, November Junior Competition

degree of diffusion, there is no reason to forego the further effect which reflection affords and in so doing utilizes rays of light which otherwise would be lost.

This same advice applies also equally in illuminating a negative for a contact printing box. It is better to have the walls of the box lined with good matt white paper than with mirrors, as I have sometimes seen, and while I am upon this point of printing boxes I may emphasize one item which has nothing to do with the subject proper of these notes, but which, apparently, is often ignored by those fitting their own electric lamps. It is that the lamp should be placed longways in the box, that is to say, with the length of the filaments parallel with the negative. You thus get a greatly increased illuminating area as compared with that obtained by fixing the lamps, as is often done, with their tips uppermost. That such a piece of advice is not altogether uncalled for should be evident from the fact that some few years ago a special pattern of metal-filament lamp was introduced in which the filaments ran as a kind of grid horizontally across the bulb. This was for no other purpose than for obtaining the larger illuminating area which is just as easily secured by placing the lamp sideways.

These instances should be sufficient to emphasize the value of securing diffusion of light both by reflection and transmission, but in conclusion, the conditions of a portrait studio need be mentioned only in order to remind my readers of the large part played by diffused light reflected from studio walls in the lighting of the sitter. In a studio which is too big this effect is lost, and the only remedy in such cases is to erect, as it were, a studio within a studio. In others of more appropriate size it is lost from the dark color of the walls. Instead of the light being reflected in very large measure it is absorbed by the dark wall covering, and I could point to instances where exposures in a studio have been cut down to a surprising extent by getting rid of dark brown or deep green wall-coverings and replacing them by light gray or cream. — *British Journal of Photography.*

PLATINUM EFFECTS ON SOLIO PAPER

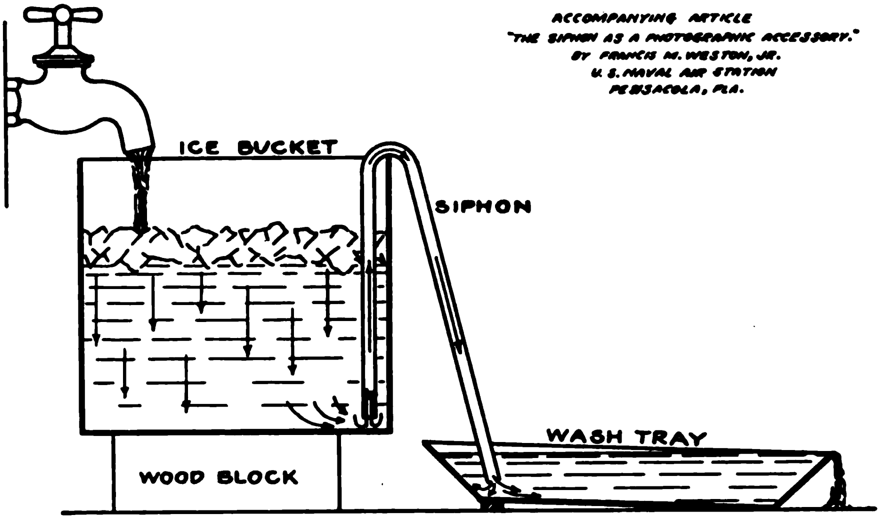
JAMES THOMSON

A COUPLE of decades ago when print-out papers were the rule rather than the exception — a time when aristo-platino as a printing medium de luxe was in the ascendant, it was necessary in order to get good blacks by platinum toning, to first tone to a purple with gold, and then replace the golden resultant image with that other aristocratic metal, platinum. A double toning.

Beautiful blacks and pure whites on a semi-matte paper could thus be had, but the same system was never advised where glossy papers of solio order were involved. It was the claim that the baryta substratum essential in the coating of gelatine chloride of silver papers was detrimental to good results. Be that as it may, it is a fact that away back in 1906 when experimenting for an entirely different purpose, I worked out a formula whereby prints made on glossy papers could be admirably platinum-toned without the use of gold. It is a single toner applicable to all chloride of silver papers but is especially useful with glossy papers and prints made by the old plain salted paper process. Prints thus treated have most admirably stood the test of time. When plain paper prints are thus toned they have much the aspect of platinotypes.

Lyonel Clark away back in the latter part of the last century worked out a formula whereby chloride of silver prints could be toned with platinum. It was a rather expensive process however, and in my opinion equally good results can be had by my formula. The Clark formula reads as follows — distilled water ½ ounce, chloro-platinite of potassium 15 grains. For toning take 1 dram of the foregoing, make up with water to 2 fluid ounces to which add 2 to 3 drops of nitric acid. Toning of matte papers in this bath is rapid.

Solio toned with platinum is admirably suited for subjects having considerable fine detail. In toning the silver prints with gold, there is sure to be a loss at the light end of the scale, but when platinum is substituted, no such loss is apparent. For this reason whenever I have had occasion to do copying with the camera I have when possible used a print toned with platinum in preference to any other kind. In copying from a photograph it makes considerable difference in the resultant negative what kind it is. A print made on normal gaslight paper will be entirely different from one made on P. O. P. toned with gold. The last will most assuredly betray in the deeper shadows such detail as happens to be in the negative, while in the first named, density obscures it. Under the actinometer Solio records up to the 16th step, while the normal gaslight paper shows but 10.

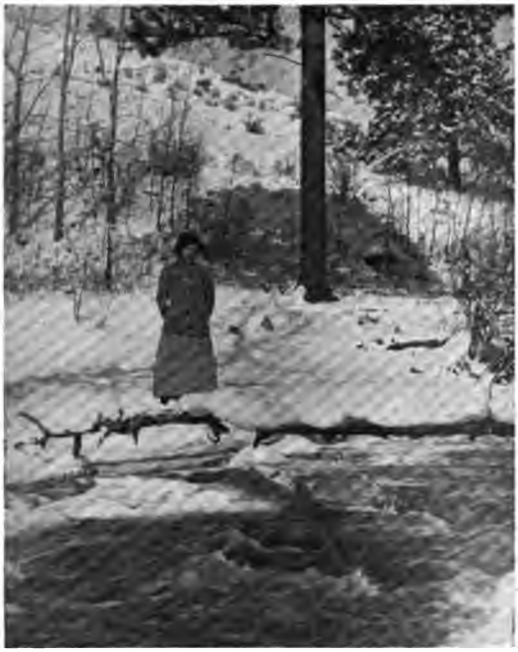


and ice, start the siphon running, then adjust the flow from the tap to keep a constant water level in the bucket. A few cents' worth of ice cracked into pieces about the size of a hen's egg will cool enough water to wash a batch of films. As the water from the tap is cooled by the ice, it sinks to the bottom of the bucket where it is drawn off at once by the siphon, thereby giving the greatest efficiency from a small quantity of ice.

In the country where running water is not available, the siphon may be used in the same manner as above to save the labor of washing films by hand. Here a large wash tub near the well or pump takes the place of the ice bucket in the drawing. A few minutes work will fill the tub with water, and then the siphon will take care of the rest of the operation.

To those who are not familiar with the use of the siphon, it may be explained that any bent tube of rubber, metal, or glass will serve the purpose provided the outlet end of the tube is *lower* that the suction end. To start the siphon, the whole tube is filled with water and the ends closed with the fingers until it can be set into position in the bucket or tub. As soon as the ends are released the water will start to flow, and will continue as long as the supply lasts.

If a small tube is not obtainable, a large one may be used and the outlet end plugged down to the desired size so as not to use more water than is necessary for efficient washing.



A WINTER MORNING OLIVER FRANTZ

A WINTER MORNING

In order to get proper relief, modeling, and texture in snow, it is usually advisable to select a time when the sun is shining to make the exposure, for without shadows such pictures are apt to be rather flat and uninteresting. But very strong sunlight introduces difficulties, by reason of excessive contrast, which call for considerable care in exposure and development. Rather weak, diffused sunlight such as is often obtainable at that time of year, lends itself admirably to good pictures. Under such conditions good tones with sufficient shadow relief can be obtained without much difficulty, provided the exposure is reasonably correct. Mr. Frantz's picture, "A Winter Morning," is excellent in its rendering of snow; there is sufficient relief to indicate its texture but, at the same time, the shadows are luminous and full of gradation and detail. The tone of the sky is well suggested, just a shade darker than the snow, which is what it should be under the prevailing lighting conditions. The figure is well placed in the picture space and adds very much to the interest of the picture. It is unfortunate that the lens for making the enlargement did not properly cover the print. There is a distinct falling off in the definition in the corners. From the pictorial standpoint the subject is interesting and is well treated, the only comment we have to offer being that possibly a slightly different point of view might have given a more pleasing arrangement of the foreground. As it is, we think it would be well to trim off some of the water, as there is quite enough in the rest of the picture, the figure and the background, to provide the necessary interest. This interesting study was made in Colorado, in February at 9 A. M. 3A Kodak camera, Rapid Rectilinear lens of 6¼ inches' focal length used at U. S. 32, exposure 1-25th second in diffused sunlight, Eastman Non-Curling film developed with pyro in a tank. The enlargement is from part of the negative on Artura Carbon Smooth.

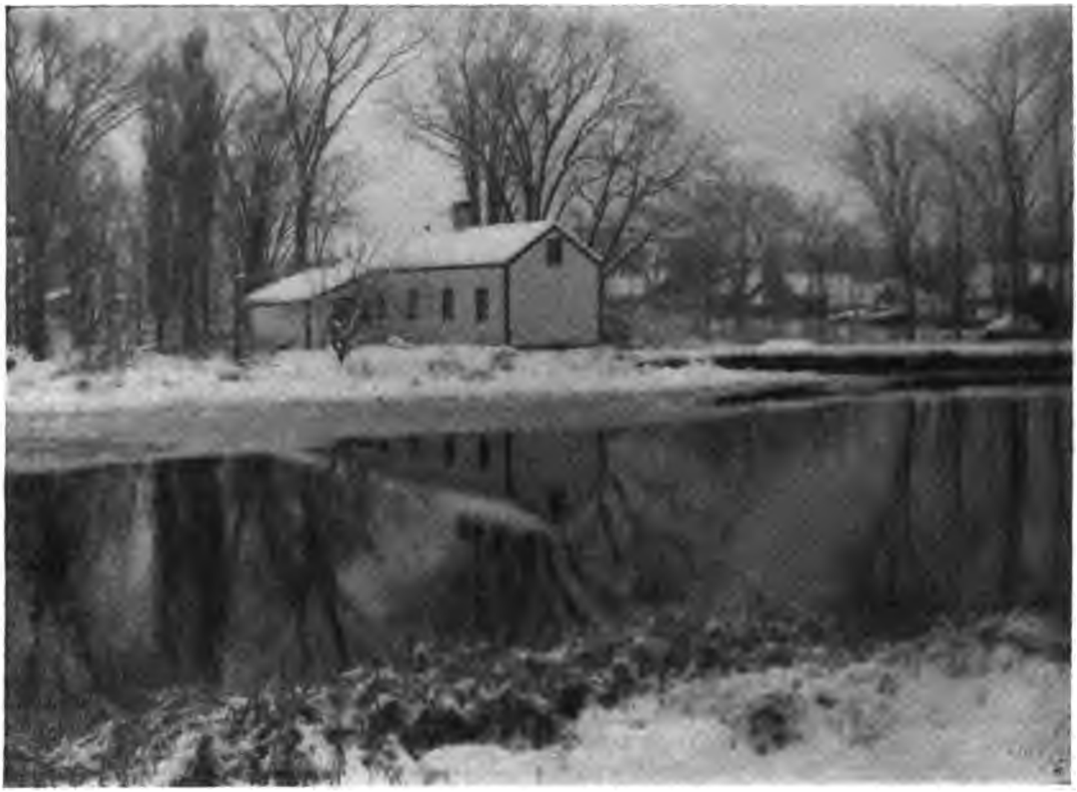
WORKING-IN BACKGROUNDS

Mix a lot of old 8 x 10 and 5 x 7 negatives, cleaned, with some emery flour, water, tin box-cover, elbow grease, and a rainy day, in such a way as to result in a lot of 8 x 10 and 5 x 7 ground-glass, which keep as stock.

In place of "working-in" a background on ground-glass varnish, with spring clips hold the face of your 5 x 7 negative to the back of an 8 x 10 ground-glass, keeping its edges some little way from the edges of the ground-glass. Now on the retouching frame, work up with pencil on this ground-glass your background, putting in deeper shadows with vaseline on ball of finger. To print, adjust back of negative to face of ground-glass in 8 x 10 frame. Such a background can be kept for use with other similar negatives, and modified in a few minutes to fit each. To print down white draperies, lay ground-glass face out in frame. Put negative on this. With vaseline on ball of finger, work over the drapery. In desperate cases use this together with ground-glass varnish treatment on back of negative. You can also modify backgrounds with pencil and vaseline in the same way.

A NOTE ON WASHING BROMIDE ENLARGEMENTS

When bromide enlargements or large-size bromide or gaslight contact prints are washed in a considerable volume of water — such as a bath half filled — it will be found, even if the water is kept running, that some

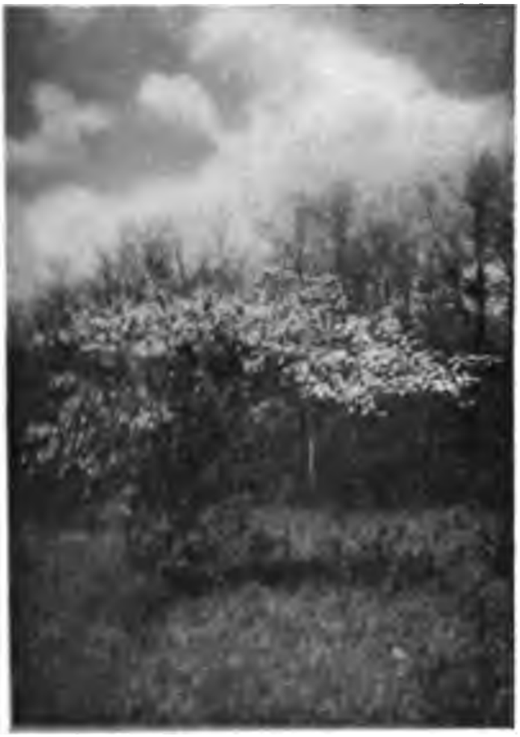


ON THE MILL-POND OLIVER P. YOUNG

of the prints will sink to the bottom while others will show a tendency to float on the top of the water. These diametrically opposite characteristics result from the fact that papers of various makes and surfaces differ considerably in both weight and texture. Both extremes need to be guarded against, as neither the "sinkers" which lie in the hypo-laden water at the bottom nor the "floaters" which remain at the top, with their surfaces almost dry, will be thoroughly washed unless special care is exercised in dealing with them. To ensure that they are effectually freed from hypo contamination (which spells ruin to a print if it is to be subsequently toned) the whole of the water should be entirely withdrawn three or four times during the washing process; the prints which go to the bottom should be laid on the surface of the water and allowed to sink gradually, and the prints which persist in keeping to the top should be gently pressed under water from time to time. Also, in addition to the movement occasioned by the inflow and outflow of water, the general bulk of water should be kept in motion by being frequently agitated during this all-important operation of washing. Above all, the outflow of water must be from the *bottom* of the washing utensil, in order that the hypo (which, being heavier than water, sinks to the bottom) may be drawn off *first*. — *Amateur Photographer.*

ON THE MILL-POND

There is no method of pictorial representation that will give as fine a rendering of tone gradations as will a correctly exposed and properly printed photograph, and this is the peculiar virtue of the process that photographers should strive to make the most of. Mr. Young's picture, "On The Mill-Pond," is an unusually fine example of delicate tone rendering, and as such is extremely interesting. There is evidence of careful thought and consideration in the placing and arrange ment of the objects depicted, the snow covered house is in a good position in the picture, and the line arrangement is satisfactory. Even though no ray filter was used, the ex-



IN FULL BLOOM — CHAS. H. BURTIS

[illegible] [illegible] to give correct tones [illegible] [illegible] in the water are well [illegible]. Made in Maine with a 2¼ x 3¼ [illegible] [illegible] Kodak Anastigmat f/7.7 [illegible] f/11, light, dull cloudy at 2 P. M. [illegible] exposure 1-25th second, [illegible] film developed with hydro[illegible], [illegible] on Special Portrait [illegible]

A CHEMICAL METHOD OF BLACKENING WOOD

Many makers of cameras and photographic accessories are frequently seeking a means of blackening the wooden parts of cameras by chemicals rather than by paint. In order to secure a good dead-black surface, the wood should first be cleaned well with glass-paper and all moisture driven off by heat. The solution is

A

Potassium bichromate	15 gr.
Copper chloride	5 gr.
Warm water	1 oz.

After the surface of [illegible] has been well cleansed and [illegible] over with the solution [illegible] soaking in and drying. When the wood is quite dry, the surface is sponged over with the following solution:

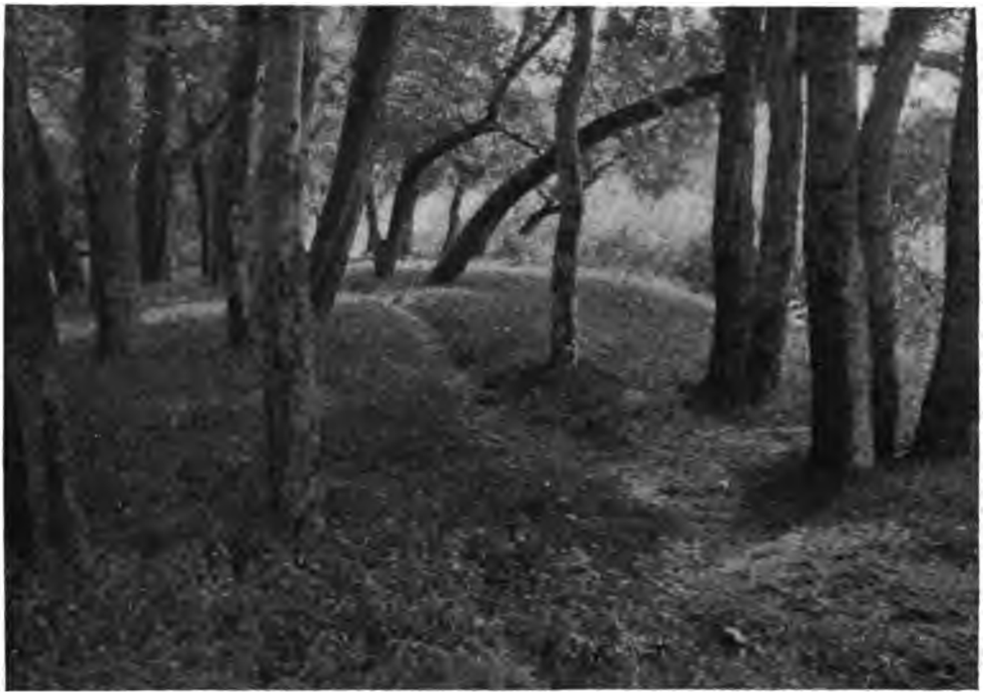
B

Aniline hydrochlorate..........	80 gr.
Water........................	1 oz.

If the black thus given is not deep or satisfactory, the process should be again repeated. — *Amateur Photographer.*

IN FULL BLOOM

Very frequently we are attracted by a scene or object in nature and think it is picturesque, only to find that it does not make as interesting a picture as we thought it would. Sometimes this is because the color of the original object is very striking and it is that that attracts us and not the lines or masses, or such qualities as we can transfer to our picture. A subject that is attractive because of its color will often be disappointing in a photograph and this is the case, to some extent, in Mr. Burtis' picture, "In Full Bloom." As a matter of fact, in this particular picture, the sky is more attractive and more interesting than the blossoms, though, from the title, we judge that the latter are intended to provide the motive. We must not conclude, however, that any subject that is attractive in color will be unsuitable for picture making. If it possesses other necessary qualifications, the color will only add to its attractiveness provided that steps are taken, as in the case of "In Full Bloom," to record the color as nearly as possible according to its visual intensity. A picture must be simple, must have good lines, interesting masses and pleasing tones in order to be completely satisfying to those who see it without having seen or been influenced in any way by the original subject. Mr. Burtis' picture has many good points, notably an excellent rendering of tones and color, but it lacks concentration of interest and decorative qualities, and therefore is not entirely successful from the purely pictorial point of view. We believe that a subject like this needs more distinct definition and clearer detail in the blossoms and foliage. Made in Newfoundland, N. J., with a 5 x 7 Korona view camera, single achromatic lens of 11 inches' focal length, used at f/5.6, K-3 filter, light sun, at 3 P. M. in May, exposure 1-5th second, Seed Non-halation Ortho plate developed with Monomet in a tank, print on Argo Grade AA.



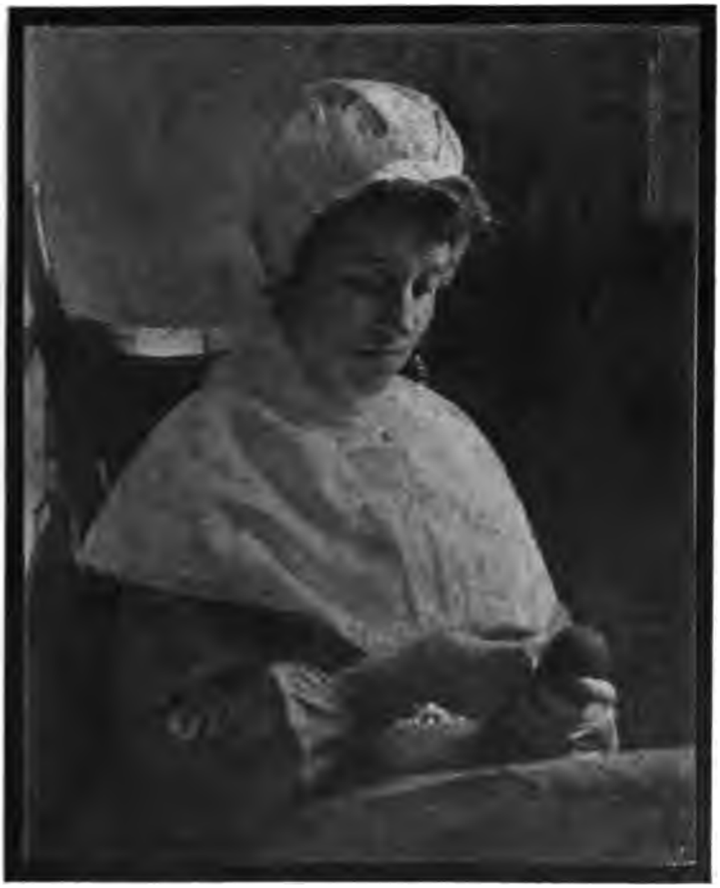
PATH THROUGH THE WOODS — WM. O. YATES

PATH THROUGH THE WOODS

It is not at all unusual for a pictorialist to wander through the woods all day long looking for suitable subjects for his camera and finally return without making an exposure. The reason why good subjects are hard to find is because there is too often an entire lack of simplicity. There is too much pictorial material and one "cannot see the forest for the trees." Then, too, the tree trunks and branches often afford a multiplicity of lines that would be far from restful in a photograph. This is what we feel in Mr. Yates' picture, which in many ways is very charming, but which is not sufficiently simple to be really pictorial. The group of trees on the right of the picture is compact and solid, but the rest of the picture is too busy and there are too many scattered tree trunks to provide a well balanced pattern. Technically the print is quite good, the tone gradations are excellent and the enlargement is one of fine quality and is nicely mounted. In woodland scenes of this sort the artist must always try to suggest rather than try to represent what is actually there. One or two well placed trees or groups of trees will suggest the woods far better than a large number of trees, and good use should be made of the imagination. In this particular case the diagonal line of the path helps very much to pull the composition together. Made with an Ansco V. P. No. 2, size 2¼ x 3¼, Ansco Anastigmat lens of 3½ inches' focal length used at f:6.3, strong but not intense sunlight at 3 P. M. in August, exposure 1-10 second on Ansco Speedex film through a three-times filter, enlargement on Cyko Normal Studio.

PHOTOGRAPHIC EFFECTS OF METAL

Radium, when placed in close proximity to a photographic plate wrapped in its original black paper covering, will emit rays which will pass through the paper and expose the plate. If a sheet of metal such as aluminum be interposed between the plate and the radium, the fogging effect will still take place, due to the rays having passed through the plate. The ordinary luminous pendants attached to pull chains of electric lamps, the luminous figures on watches, all give this same fogging effect when placed near an unexposed photoplate or film. The Welsbach mantle will also leave its impression on a covered and previously unexposed



GIRL DARNING

JAMES THOMSON

plate. Certain metals, such as zinc and magnesium will also affect a photo plate when placed next to the naked plate in the darkroom. To show this curious effect, the metal should be cleaned, and then brightly polished, and laid on the plate in a darkroom. An exposure of about a week or more should be given. Magnesium metal, aluminum and zinc were found to give the greatest fogging effects. It was also found that an increase of room temperature increased the fogging, as well as a high moisture content of the air, and a high atmospheric pressure. The effect will not take place in a vacuum or in dry air. Moisture has to be present.

It is thought that the metals do not fog the plate because of their giving out a radioactive emanation like radium and thorium compounds, but that a chemical reaction takes place. The most likely explanation is that the metals form a peroxide of hydrogen from the moisture in the air, and this nascent, or newly born hydrogen peroxide affects the plate.

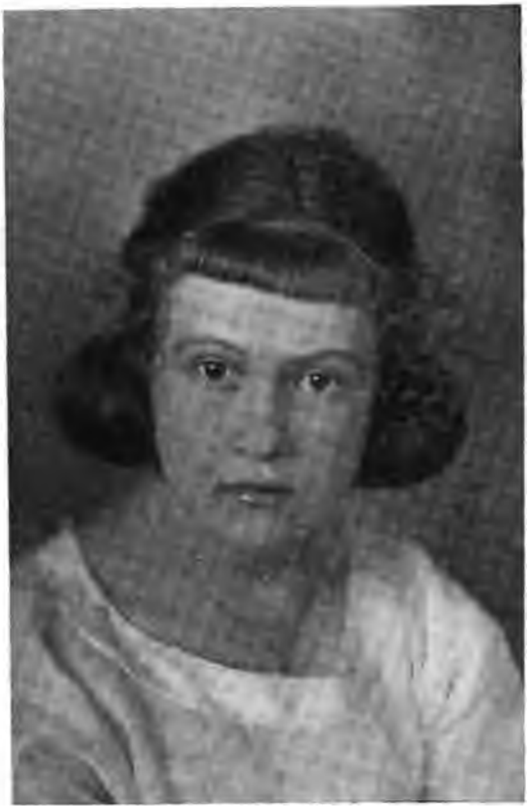
Hydrogen peroxide will affect a photographic plate, just as the radium salts and compounds will, but a thin sheet of aluminum interposed between the plate and the hydrogen peroxide will cut off the invisible rays which create the fogging effect. — RAYMOND B. WAILES.

GIRL DARNING

Every picture should be studied carefully after printing to make sure whether or not a little trimming from one side or another would improve it. We believe there are very few amateur photographers now who use standard size mounts, either with an embossed border or an opening to slip the print in, for it is seldom a print can be made to fit a mount; the mount should be made to fit the print. Cover up a little strip on the left hand side of Mr. Thomson's "Girl Darning" just up to the edge of the white fichu and it will be obvious at once how much the picture is improved by the removal of the rather fussy detail in the chair-back. This also improves the placing of the head in the picture space which, at present, is a little too far towards the right. The greater space, if any, should always be in front of the head rather than behind it. It is interesting to note that this print was made on a home-sensitized silver-platino paper. It is a good print, with excellent gradations in the highlights. Other data — made with a Seneca 4 x 5 camera, R. R. lens of 6½ inches' focal length, used at *f*:8, good light at 3 P. M. in May, exposure 30 seconds, Stanley plate, developed in pyro.

ELLEN

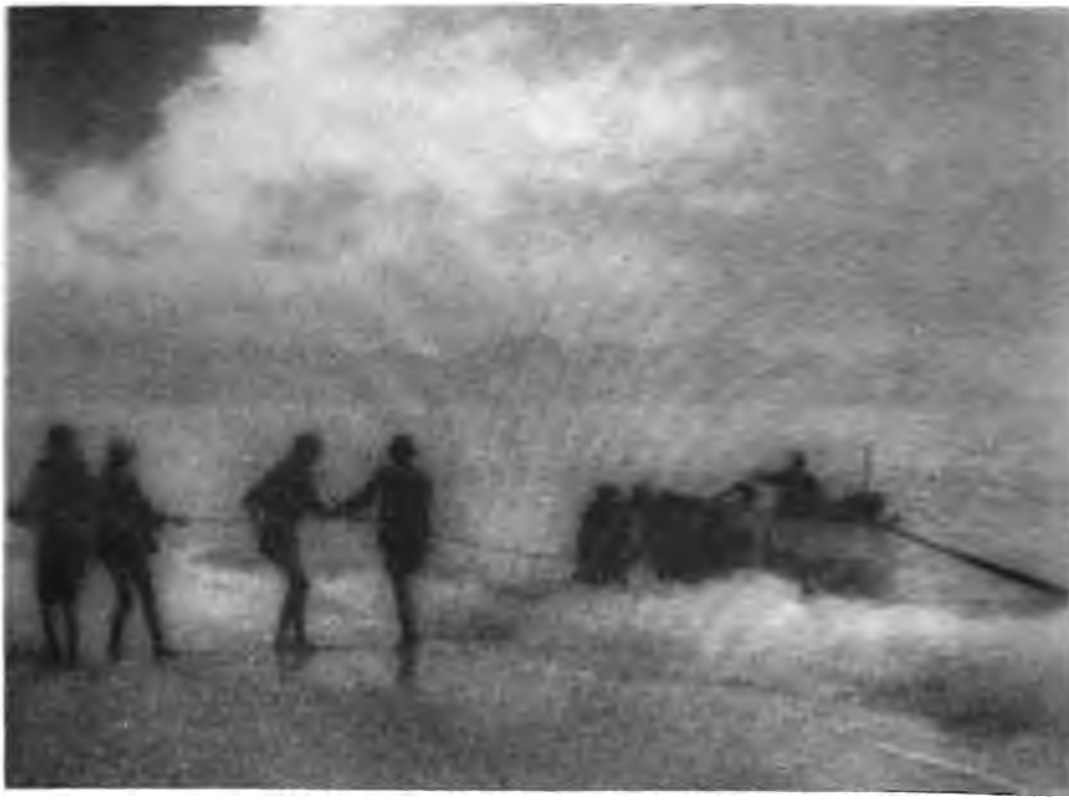
This is a nicely lighted portrait with good modeling and roundness in the face. The maker of it asks, on the data slip accompanying the print, "should catch-lights in eyes on one side be removed?" We think not. The one that should be removed, if any, is the one in the middle rather than the one on one side. It is usually a good plan to spot out catch-lights in the eyes if there is more than one, leaving only one in each eye and the spot of light in each eye should be in about the same relative position and about the same size. Another thing that would improve this portrait is a little more careful consideration of the placing of the head in the picture space. The chief point of interest in the face is the eyes, and it is important to have the eyes so placed that they are well above the center, so that good pictorial balance is secured. Those who have studied drawing, either from casts or from living models, will know that the space from the eyes to the top of the head is exactly equal to the space from the eyes to the point of the chin and that therefore, in order to get the eyes high in the picture space the head must be well above the center. If the head is too low, it always gives a suggestion that the person photographed is slipping down towards the bottom of the picture. This is the reason why one sometimes sees pictures in which part of a hat, part of the hair or even part of the head has been trimmed off. In this picture better balance would have been secured if the head had been placed higher. This could be remedied by trimming a little from the top. The tones of the face are well rendered and are about right in relation to the tones of the dress. Just a very little retouching on the forehead, between the eyebrows, would improve the expression and would take away the slightly troubled look that the child shows. Made in a room lighted with one large window at 3 P. M. in August, bright light, Velostigmat Series II lens of 12 inches' focal length, used at *f*:4.5, Ingento 8 x 10 Portrait camera, exposure 1-5 second on Eastman Portrait film which was developed with pyro-soda, print on Artura E.



ELLEN JOHN P. GEERTZ

WIDE ANGLE LENSES

Wide angle lenses are very short focus in comparison to their covering power, and are generally of small aperture. They may be of rapid rectilinear type or more highly corrected anastigmat design. Some workers realize the advantage of much light in focusing and employ an anastigmat with lots of reserve covering power, so that they focus in comfort and get the necessary depth by stopping down. Lenses such as the Goerz Dagor and the Protar VIIa can be used in this way, if of appropriate focus.



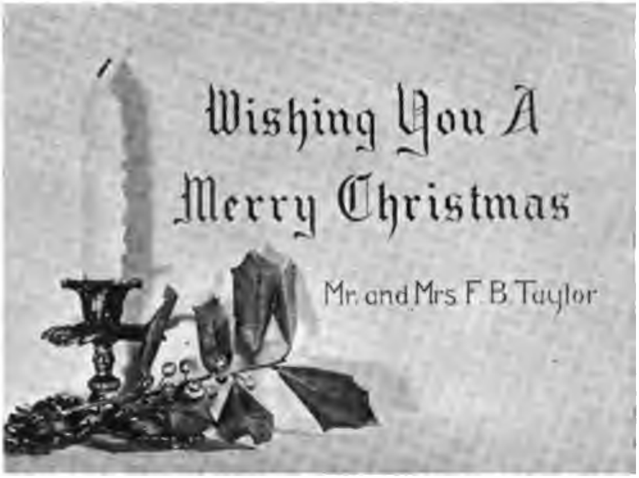
AS THE STORM ROLLS BY J. K. HODGES

AS THE STORM ROLLS BY

This is a very effective picture with well arranged masses and delicate tone gradation. We cannot see that the use of the soft-focus lens in making the enlargement has benefited the picture in any way. Even at a considerable distance the spreading of the dark tones of the figures into the surrounding lighter tones in the water is distractingly apparent and ruins the delicacy of gradation in these light tones. We think that a carefully made "straight" enlargement would give a more satisfying result without the disturbing feature referred to. The sky and the distant hills are particularly good, though we think the patch of cloud in the upper left hand corner should be lightened a little. The figures are well placed in the picture and are apparently entirely unconscious of the proximity of the camera. Made in France, at Nice, with a Vest Pocket Kodak fitted with a Kodak Anastigmat, *f*:6.9 lens stopped down to *f*:8, misty light at 2 P. M. in January, exposure 1-25th second, Eastman film, developed with Rytol, enlarged with Pinkham and Smith Synthetic lens on Eastman Royal Bromide.

A HINT ON PHOTOGRAPHING MACHINERY

Machinery often has to be photographed where there is a poor light, while the subject itself has some parts shining like mirrors and others painted a deep green, red, gray, or black. Much can be done, says *The Professional Photographer*, toward reducing the harshness by a liberal use of a diffusing material, such as butter muslin; but light-softness must be employed in the right way, or it will be worse than useless. Suppose, for instance, that the machine is in a room where there is only one small window. If



CHRISTMAS CARD FREDERICK B. TAYLOR

the muslin is tacked over the window it will do little or nothing toward diffusing the light; it will necessitate a longer exposure, but that is about all. The muslin should be used in the way a head screen is used in the studio; that is to say, it should be hung up between the machine and the window, as near the machine as possible without letting it show in the photograph. This arrangement allows all the light to come into the room, and softens only that which falls directly on the machine.

CHRISTMAS CARD

There are few branches of photographic work in which clean and careful technique are more necessary than in the production of greeting cards such as the one illustrated above. In such work there is often an opportunity for the exercise of skill in other ways besides the manipulation of the camera. A card of this sort may often be embellished by the addition of some neat and appropriate lettering especially if the maker of the card is as skilful with his pen as Mr. Taylor. A sense of fitness and an appreciation of the importance of simplicity in the choice and arrangement of the material are of great importance in such work. In all these respects Mr. Taylor's card is fully adequate; the photographic technique is faultless, the lettering is remarkably well done and the material is appropriate and simple. We have printed from time to time articles dealing with the making of such cards but, while the ideas of others on the subject may often be helpful and suggestive, there is no phase of photographic work in which there is greater scope for originality both in the conception of the idea and in its treatment. A personal greeting card should be suggestive of the personality of its maker and this is possible only when the maker of the card has ideas of his own and carries them out in his own way. This particular card was made with a Poco camera, 4 x 5, fitted with a 6 inch R. R. lens used at *f*:16. The exposure was 2½ minutes with two 40-watt Mazda lamps, Cramer Medium Iso plate, three-times color filter. The plate was developed with hydrochinon made with caustic soda and the print is on Artura N. C. Medium.

MASKING LANTERN SLIDES

When masking lantern slides, trouble is sometimes experienced in getting all corners of the mask right angles. To cut out the mask in thin opaque paper is perhaps the best mode of procedure, but when slides are wanted in a hurry and in large numbers this method often takes too long. The following method has proved exceedingly useful, being at the same time quick and efficient. Obtain a sheet of squared paper used for mathematics and obtainable at most stationers. This is usually ruled in inch squares, and again subdivided with fainter lines into tenth of an inch squares. If the slide is placed with the film side up and with the squared paper beneath, the lines should just show through. Incidentally the extent to which the lines show through the slide gives some guide as to whether the slide is of the correct density. The first side of the slide is then masked with a binding strip slightly moistened. This strip is placed along the slide, using the line underneath as a guide. The next strip is then placed along any convenient line, which will, of course, be exactly at right angles, and so on until all sides have been masked. One strip for each side is usually sufficient, but two or more can be used if necessary to cover the space. With a little practice this method can be carried out very quickly, with certainty of getting all corners right angles.

RAY FILTERS

Do not use a ray filter with ordinary plates or films. In most cases, it is a waste of energy, for in spite of the fact that you may reduce contrast so as to preserve cloud forms, you have not accomplished the main purpose, the rendering of proper color values. Ordinary emulsions are color blind to many of the rays that the filter passes. The result is that the foreground becomes a black mass, without detail, while exposure is lengthened many times. Use only orthochromatic emulsions on which the exposure need only be lengthened two or three or five times according to the depth of the filter.

Our remarks are relative, as with some films, we have a certain orthochromatic value not present in ordinary plates. Full color correction, however, comes only with proper orthochromatic emulsions and with proper exposures. The correction may be over done, as in the case of a too strong bichromate of potash liquid filter, known to our older readers, where underexposure produced clouds on a black sky; the kinds of clouds which are hardly ever seen except on the southwestern deserts.

When proper exposure for the sky is made, the unclouded portion will show with greater density above, shading down in intensity as the horizon is approached. In mountain pictures we have noticed that full exposure and full development — what some amateurs would call overdevelopment — will produce a fuller color value in the print. The negative is only a means to an end and while we may have a dense negative, the results justify the means employed.

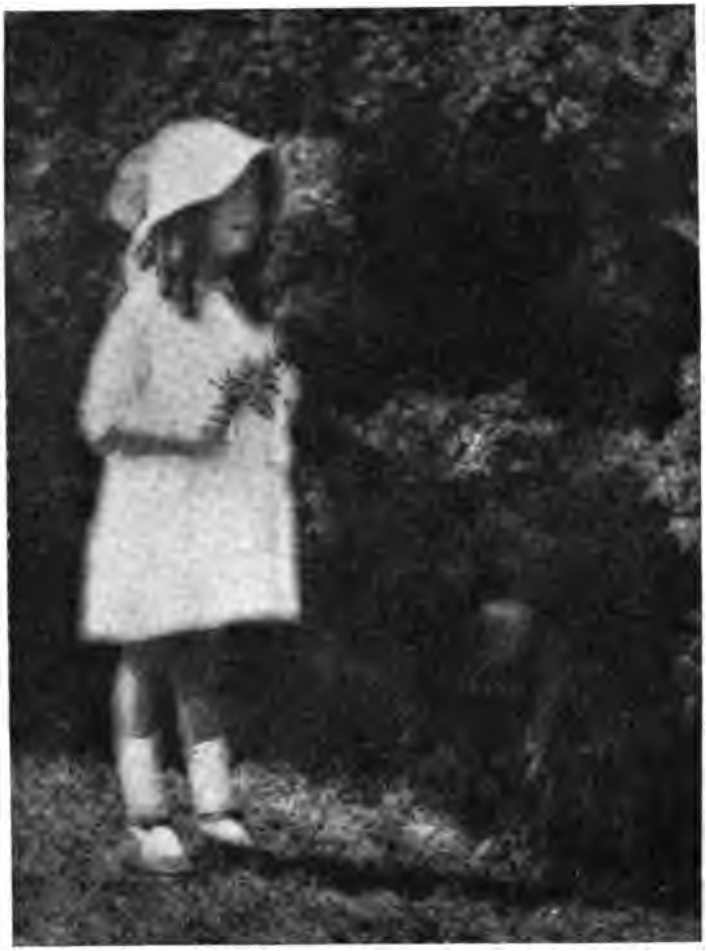
Accuracy in filters is desirable, and cheap filters where surfaces are not plane parallel will make it necessary to stop down the lens more than with an accurate one. This is a disadvantage as it still further lengthens exposures. All filters, however, change the focus of a lens, even if the filters are optically perfect, and the best results will be attained by focusing with the filter in place.

All glass filters are offered which have many optical advantages. The glass itself is the filter, and it is therefore only necessary to grind plane surfaces perfectly parallel, a much easier task than trying to grind two very thin plates with four surfaces which must be both plane and parallel, besides the danger of warpage from the contractile power of the dyed gelatine film. Unfortunately, a lot of the so called colored filter glass is transparent to the blue and violet that it purports to cut out and such filters merely lengthen exposure without materially enhancing orthochromatic effect. Just as engraving the word anastigmat on a lens does not necessarily cure astigmatism the words spectroscopically tested may have a hollow meaning.

Don't expect impossibilities from color screens. We heard once of a man who returned a screen as useless, on account of his failure to get better results in photographing a black ebony coffin. In this case, the filter did nothing but lengthen the exposure.

BARBARA

Like all the pictures that Gen. Whitlock sends to us, this shows unmistakable evidences of the use of thought, care and skill in its production. The placing of the figure in the picture space is very satisfying and the pose and expression of the little subject are delightfully natural. Technically the print is not quite as successful as some we have seen by this worker; the contrasts in the print are too great. Either the printing paper was a little too "hard" or the negative was a trifle overdeveloped. A little more tone and gradation in the white dress would improve this print very much. Those of our readers who are interested in portraiture in the open air might study this picture with advantage, noting the clever arrangement of the lighting and the skill shown in the selection and treatment of the background. Although the use of a semi-achromatic lens in making enlargements often imparts a pleasing quality, there are some subjects, particularly those in which there are extreme contrasts, that are not entirely suited to this method of handling



BARBARA B. M. WHITLOCK

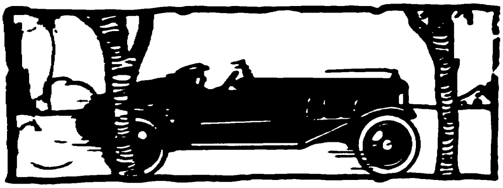
and we think that a "straight" enlargement of this particular picture would have been as good as if not better than the one before us. Made with a 3¼ x 4¼ Folding Pocket Kodak, Carl Zeiss lens, stop *f*:8, brilliant light at 2 P.M. in September, exposure 1-50th second, Eastman roll film, developed with pyro in tank, enlargement on Artura Carbon Black.

A TANK DEVELOPMENT HINT

Amateurs who develop their own films by the film tank method sometimes complain that the rubber apron in contact with the film prevents the developer from reaching certain portions of the negative, leaving these spots undeveloped, this, of course, ruining the negative. The makers of the film tank state in their instructions that the tank should be turned over every three minutes during development, but even this does not insure the developer reaching every portion of the negative. If, however, the tank be shaken up and down rather vigorously every time it is reversed during the developing process, the solution can hardly fail to reach every part of the film. Since I have been following this procedure I have had no trouble with undeveloped spots appearing on my negatives. — CHARLES M. LITTLE.

THE SHOW CASE

The rent paid for a photographer's show-window space, in a leading thoroughfare, is so high, compared with the rest of his premises, that he cannot afford to let it get into a shabby or neglected condition.



THE PHOTOGRAPHIC REVIEW

By E. J. Wall, F. C. S., F. R. P. S.

Increasing the Light from Incandescent Lamps. — G. Mazo states that if the glass of an electric lamp be silvered with the exception of a small window opposite the filament the latter heats up considerably and a 2.5 ampere lamp gives as bright a light as a 4 ampere. (*Ombres et Lumière*, 1921, **28**, 405.) Half-silvered lamps have been supplied for years by Bausch & Lomb for projection and other work, and it is an extremely easy matter to silver a bulb, either by the old grape sugar process or with formaldehyde, this latter being possibly the easier; the only thing to be careful of is to keep the screw from contact with the solution, as the solder is rapidly eaten away and the vacuum destroyed. It should also be mentioned that practically this method is equivalent to over-running the lamp, and its life becomes shortened thereby. The increase in light is due to the fact that the bulb acts as a continuous mirror, like the Ulbricht globe, and the focus of the sides is practically in the filament.

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Basic Chrome Alum. — Chrome alum when dissolved in water hydrolyses and acid is set free at first and then this acid diminishes, as the colloidal chromium hydrate is less stable as the particles become larger. At a temperature of 100 C. this period is very short and it is preferable to add sufficient sodium carbonate to entirely precipitate the chromium hydrate and wash it and then redissolve it. (*Compt. Rend.*, 1921, **172**, 1488; abst. *Sci. Tech. Ind. Photo.*, 1921, **1**, 71). It is a well-known fact that chrome alum only exerts its full tanning action in an alkaline solution and it is usual to add sufficient ammonia to its solution to form a permanent precipitate after boiling and then to filter. This method was suggested by Namias over 20 years ago.

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Mercurial Intensification. — R. Namias points out that it is well known that gelatine very tenaciously holds the mercury salts after the bleaching with mercuric chloride and that these can only be removed by successive baths of dilute nitric or hydrochloric acid. He now suggests that this trouble may be overcome by the use of acid bleaches with plenty of ammonium chloride, such as: —

Hydrochloric acid	10 ccm
Ammonium chloride	150 g
Mercuric chloride	20 g
Water to	1000 ccm

A good washing will completely prevent the retention of the mercury. Should the gelatine happen to be stained by the mercury, the stains can be removed by bleaching the negative in

Potassium permanganate	4 g
Hydrochloric acid	20 ccm
Water to	1000 ccm

This converts the entire metallic deposits, image as well as stains into the corresponding chlorides; the silver is insoluble whilst the mercury chloride dissolves. The negative should then be well wash
and redeveloped. (*Il Progresso Foto.*, 1920, **27**, 3
abst. *Sci. Tech. Ind. Phot.*, 1921, **1**, 19.)

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Prints from Screen-Plates. — O. Fielitz p
poses to make a mosaic screen-plate, the elements
which are stained with dyes soluble in alcohol, b
insoluble in water. This is then coated with
gelatine emulsion containing a white pigme
After exposure and development, in the usual w
it is treated with a hardening solution of the brom
type, which insolubilises the gelatine in proporti
to the amount of silver; the plate is then fi
washed in warm water, and dried. A sheet
gelatine impregnated with alcohol is then appli
and the colors diffuse through the variable thickn
of the image into the gelatine sheet. The image
then stripped and applied to a black suppo
(*French Patent* 515,067, 1917; abst. *Sci. T*
Ind. Phot., 1921, **1**, 60.) An exactly similar pate
was granted to H. Pedersen, (*Eng. Pat.* 121,7
1917.) How one can impregnate gelatine w
alcohol is not stated by the inventor.

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A Novelty in the Bleach-out Process.
P. Elmassian would prepare a bleach-out pa
sensitised with hydrogen peroxide or anethol a
apply it to a conducting plate, through which
passed a current of electricity during the expos
to light. The exposure is said to be so short th
that camera exposures are possible. (*French P*
509,671, 1919.) This inventor seems to be obsess
with the peculiar properties of electricity, as he h
already taken out three or four patents for the Lip
mann process, in which the plate is to be in conta
with an electrically live plate during exposure; a
he seems to have discovered that the X-rays or a
other form of energy may be used instead of lig
in color photography. Personally I cannot see h
these rays can give colors, but no doubt there
something in the process — even if it is only f
for the patent offices.

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Acrolein, a New Hardening Agent. —
Moreau & A. Lepape have patented the preparati
of acrolein by catalytic dehydration of glycerine
200° C. in the presence of the acid sulphate of p
tassium with a little neutral sulphate; after neutr
isation the product is said to be 90% pure and w
keep unaltered in opaque bottles. (*Fr. Pat.* 509,6
1919.) This is said to be a much more energe
hardening agent for gelatine than even formaldehy
Exactly where the novelty lies in the above pate
is not clear, as the use of potassium hydrogen sulph
for dehydrating glycerine is one of the standa
textbook methods. Acrolein, or as it is sometim
called, acraldehyde, has the chemical formula C
CH. CHO, and probably most people have made
acquaintance without knowing it, as it is the nause
smelling stuff of half burnt fats. It is a colorl
liquid, boiling at 52°C., which produces sores wh
brought into contact with the skin and is a verita
tear gas, actually being much worse than formal
hyde. Its introduction into photographic pract
would increase the demand for gas masks enormous

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Some New Developers. — J. Hauff patents
use of the sulphonic and carboxylic acids of orth
or para- or ortho-para-amidophenols, and as
example cites a solution of 100 g p-amidosalic
acid, 500 g anhydrous sodium sulphite, in 570 c

water, with the addition of 210 ccm of 5 molecule-grammes of caustic soda per liter. For use the solution is diluted with two or three parts of water. Exhausted developer may be regenerated by the addition of fresh alkali. (*Eng. Pat.* 154,198, 1920.)

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Antihalation Backing. — G. Stockis recalls the fact that it has been recommended to expose printing-out paper to light 'till it has turned brown and then to impregnate this with glycerine and press into contact with the back of the plate. He recommends as superior, paper coated with a warm mixture of water 200 ccm, gelatine 30 g, chrome alum 1 g, nigrosin 0.5 g. (*Bull belge,* 1920, **42,** 172.) One of the essentials of an efficient backing is that it shall have the same refractive index as the glass, therefore the above cannot be so effective as other preparations. The use of such paper dates back to the time of G. Marlow, in 1861, and he was the inventor of the word halation. Stained papers were also recommended by Abney (*Brit. J. Phot.,* 1881, **28,** 42), and also by Stolze in the same year.

T. Bolas suggests the use of oxgall because of its hygrometric properties and advises the mixture of 1 part ox-gall, 4 parts gum mucilage and 1 part vegetable water-color in tube; these should be mixed after the containing pot has been warmed in the water bath for a few minutes. It should be applied with a stiff brush, and a cover plate either of matted black glass or black celluloid supported at the corners by cemented-on microscopic cover glasses should be placed at the back of the plate. (*Brit. J. Phot.,* 1921, **68,** 3175A, 10.) Bolas states that the purified ox-gall of the drug store should be used, or that it may be made by evaporating fresh ox-bile to one-fourth its volume, then shaking with twice its volume of 90% alcohol, setting aside to clear, filtering and evaporating to the consistency of an extract. If any married man wants a divorce in double quick time this is a good recipe if the operation is carried out in the household kitchen, as the smell of evaporating ox-gall is not one of the perfumes of Araby.

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X-Rays of Pictures. — A. Cheron recalls the fact that Faber in 1914 had suggested the use of the X-rays for the examination of pictures and that Heilbron, of Amsterdam, has actually tried the same, and gives the reasons why old pictures show different results from those of more modern times. The old masters chiefly used mineral colors, while modernists use lakes, which are much more transparent to the rays; the priming of the canvas or wood was in the old days generally chalk, while now white lead is used and the latter is opaque to the rays. The radiograph of an old picture will, therefore, show modern restorations. (*Compt. Rend.,* 1921, **172,** 57; abst. *Sci. Tech. Ind. Phot.,* 1921, **1,** 23.) H. Parenty stated that he had used photography for the same purpose (*Compt. Rend.,* 1913, **156,** 1878), and had been able to show not only signatures but also figures buried in the backgrounds.

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Red Tones on Printing-out Papers. — Metzl recommends the use of the following baths for obtaining red tones on these papers: —

Ammonium sulphocyanide	5 g
Potassium iodide, 1% sol	1-15 ccm
Gold chloride, 1% sol	25 ccm
Water to	1000 ccm

This should be mixed just before use, and an acid fixing bath employed. For collodio-chloride paper:

Uranium nitrate	2 g
Fibrolysin	10 g
Water to	1000 ccm

Fibrolysin is a compound of thiosinamin and sodium salicylate, and the former may be used instead. (*Phot. Ind.,* 1921, 473.)

The first bath was suggested by A. Hélain (*Bull. Soc. Franc. Phot.,* 1901, **48,** 259), and the second one by Valenta (*Phot. Korr.,* 1894, **31,** 118). Metzl gives no credit to his anticipators.

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Sepia Toning. — Whilst the general consensus of opinion in this country appears to be in favor of the use of the alum-hypo bath, the two-bath system holds its own in Europe, and various modifications have been suggested. G. Miliani revives the use of the sulpho-selenium bath and recommends the solution of from 2 to 10 g of powdered selenium in 1 liter of 10 per cent solution of sodium sulphide, the strength being adjusted to the paper and the tone desired. The weaker the solution in selenium the more sepia the color, while with strong solutions purplish red tones are obtained, and the above solution should be diluted with from 2 to 4 times its volume of water. On diluting the solution a flocculent red precipitate will be observed, which is due to the selenium being partly thrown out, and is the cause, according to Miliani, of the yellow-tinged whites that are too often met with in this process. This may be removed by passing the prints through successive baths of a 1% solution of sodium sulphide. If the toning bath is allowed to stand in the dish for any length of time, or if kept in a partly filled stock bottle, the selenium is also partly thrown down, but it can be dissolved by the addition of more sulphide, and the same process may be adopted to revive used baths, but there is danger in this last procedure as the action of the air on sodium sulphide solution is to form hyposulphite and caustic soda. (*Il Progresso Foto.,* 1921, **28,** 150; abst. *Sci. Tech. Ind. Photo.,* 1921, **1,** 17.)

The Chem. Fabr. auf Aktien (vorm. E. Schering) has patented the use of selenium or its compounds in sodium sulphide solutions with the addition of sulphite. It is claimed that the solution is odorless and without action on the hands. (*D. R. Pat.* 335,627, 1917; abst. *J. S. C. I.,* 1921, **40,** 562 A.)

The first use of selenium for toning was made, I believe, by the Rheinische Emulsionspapier Fabrik (*D. R. Pat.,* 238,513, 1910; abst. *Phot. Ind.,* 1911, 1540; *Jahrbuch,* 1912, **26,** 507), and in the same issue (p. 174), Valenta reports on this with other methods. The stock solution was made by dissolving 10 g selenium in 600 ccm of a 20% solution of sodium sulphide, and had to be diluted with from 5 to 6 times the volume of water; brown to purple tones were obtained with orange tinged whites, this tint being removable with weak baths of acid sulphite of soda. The action was very slow and Valenta found that the addition of 5 to 10 ccm of a 1% solution of pyrocatechin to 250 ccm of the dilute solution hastened the action, and good sepia tones were obtained in a few minutes. This was introduced here as Senol. My own experiments with this proved that the action was so slow that it became a nuisance, but the addition of the pyrocatechin was not tried.

The Mimosa Akt-Ges. Fabr. phot. Papiere has recently obtained a patent for a selenium toning bath and states that if the bath be neutralised with boric acid there is no precipitation of the selenium, and the baths do not act on the skin, the gelatine or the paper. Addition of ammonia reduces the staining of the whites, which may be cleared by bathing in 10% solution of metabisulphite (*D.R. Pat.* 337,869, 1920; abst. *J. S. C. I.*, 1921, **40**, 639A.)

R. Namias had suggested the solution of selenium in sulphide and like all others of its class it is extremely unstable. He now suggests that a more stable preparation can be obtained by making sodium selenide by fusing together in a nickel or iron crucible 2 g of selenium and 10 to 15 g of caustic soda, and when the melt is cold adding 100 ccm of water. The toning bath is to be prepared just before use by mixing 20 ccm of a 25% solution of sodium sulphide, 80 ccm of water and 10 ccm of the sodium selenide. The prints should be bleached in any of the usual ways and then immersed in the solution. The addition of a few drops of the selenide compound to any sulphide bath will improve the tones. A combined toning and fixing bath can also be made by adding to 100 ccm of a 10% solution of hypo about 50 ccm of a saturated solution of boric acid, and then a few drops of the sodium selenide, made as above (*Il Progresso Foto.*, 1920, **27**, 284). In a subsequent article Namias warns against the violent action that occurs if the selenium is in powder, when heated with the sodium, as it may spurt all over the place. It has been found that the selenide will keep better dry than in solution. Better sepia tones are obtained with a selenium-sulphur compound, which may be prepared by fusing 2 g of powdered selenium with 50 g sodium sulphide and when cooled down dissolving in 100 to 150 ccm water; for use a few drops of this concentrated solution are added to a 2% solution of sodium sulphide (*Il Progresso Foto.*, 1921, **28**, 14; abst. *Sci. Tech. Ind. Phot.*, 1921, **1**, 25.)

Kraft & Steudel propose to make a self-toning paper by adding to a collodio-chloride printing-out emulsion 1 part of selenium dioxide dissolved in water or of tellurous acid dissolved in a solution of lithium hydroxide in water and alcohol, to 800 parts of emulsion. The two compounds may be used together with or without a gold salt. The prints are to be fixed in an acid bath with 5% hypo and 10% metabisulphite; preliminary washing to remove the chlorides affects the tone. (*D. R. Pat.* 337,820, 1919; abst. *J. S. C. I.*, 1921, **40**, 639A.)

A. & L. Lumiere have patented the use of sulphoxyphosphates, such as the sodium salt Na_3SPO_3, obtained by the action of alkalis on chlorosulphide or pentasulphide of phosphorus, to replace the use of the alkaline sulphides. These new compounds are inodorous, do not set free sulphuretted hydrogen and give more regular results with less risk of the whites being stained. The prints are bleached as usual and treated with a 2% solution of the above salt. (*Fr. Pat.* 507,332, 1919.)

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Sensitizing Paper, Fabrics, Wood, Etc. — J. Amiot proposes to prepare a paper on the lines of the old salted paper process by bathing in a solution of silver nitrate rendered sufficiently viscous so as not to penetrate into the material. The thickening agent is a neutral solution of casein in soda lye, and the sensitizing salts are silver nitrate, sodium phosphate and citric acid; in this mixture gelatine is dissolved and resorcin added. The solution may be applied to paper, wood, cloth or anything else. (*Fr. Pat.* 512,673, 1919; *Eng. Pat.* 151,014, 1920.) Casein was used by Blanquart-Evrard (*Compt.Rend.*, 1850, **30**, 663), both for negative and positive work; Fyfe (*Edin. Phil. J.*, 1839, 144), described the use of phosphates, and both have been used and patented many times since.

The Theory of Development of the Latent Image. — M. Volmer deals with the theory of the development of the latent image, and points out that the generally accepted theory is that there exist germs of silver in the exposed plate, and that a small quantity of silver bromide is dissolved by the developer and reduced to the metallic state, thus forming a supersaturated solution which precipitates on the silver germs, which are formed by exposure. The author considers that this is a parallel case to the precipitation of copper from Fehling's solution, when making copper mirrors; and it is well-known that the copper will not deposit unless there is a nucleus, which may be formed by local heating of the glass, or by traces of gold or platinum. The action of an alkaline solution of formaldehyde is similar to that of a developer, and its oxidation in air is notably accelerated by the presence of metallic germs; if the assumption is correct, then the oxidation of the developers should be catalytically accelerated in the presence of finely divided silver. Metallic silver was precipitated by formaldehyde, rendered alkaline with soda, and thoroughly washed. Solutions of various developers were then made by adding 0.2 g to 100 ccm of normal solution of sodium carbonate. This solution was divided into two parts and to one was added some of the precipitated silver, the other being used as control, without this addition; air was then bubbled through the two solutions till the same coloration was obtained and the results are tabulated as follows: —

	Without Silver	With Silver
Pyrocatechin..........	160 sec.	60 sec.
Metol	60 "	30 "
Hydrochinon	100 "	40 "
Glycin	80 "	30 "
Paramidophenol	120 "	20 "
Amidol	140 "	30 "
Eikonogen	50 "	30 "

It is obvious that the reactions differ in some cases, notably with metol and paramidophenol. Control experiments with other powders gave no analogous results, but gold and platinum acted in the same way. Development is, therefore, not due to the phenomena of supersaturation, but to the catalytic action of the silver germs (*Zeits. wiss. Phot.*, 1921, **20**, 189; abst *Sci. Tech. Ind. Phot.*, 1921, **1**, 37.)

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Platinum Toning. — It is well known that the use of platinum perchloride for toning printing-out papers leads to weak, washy prints because the image is strongly attacked, and potassium chloroplatinite is therefore the salt usually employed. R. Namias suggests that the latter may be prepared from the perchloride as required. To a solution of perchloride containing 1 g of metallic platinum in 100 ccm should be added 2 g of stannous chloride; in this strength the reduction is instantaneous and the solution should be diluted to 2000 ccm, and 10 ccm of hydrochloric acid and 20 g of oxalic acid added. This gives an excellent toning bath, particularly for matt collodion papers; the slight excess of tin chloride does no harm if the prints are first immersed in a salt bath, and washed prior to toning (*Il Progresso Foto.*, 1920, **27**, 211.)

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Light-Sensitiveness of Nitro-Cellulose. — It is usually accepted that pyroxylin or nitro-cellulose is unaffected by light, but Gladstone & Hofmann showed that it was more rapidly decomposed in light than in the dark. B. Homolka now brings forward a method of proving this by obtaining a image thereon. The action of light is to set free nitric acid. The following solution is used:— 1 g 9-aminophenanthrene and 0.2 g citric acid are dissolved in 10 ccm alcohol and added to 10 ccm ether and 20 ccm of 4% collodion. This collodion is coated on paper and, after drying, exposed under a negative to sunlight. A red image is obtained in from 60 to 90 minutes, which can be fixed by repeated treatment with benzol; the image is formed in 9.9′ azoxyphenanthrene. If a plain collodion film be exposed there is no visible result but a latent image is formed, as is seen by treating the film with a benzol solution of 9-aminophenanthrene, when a red negative copy of the original is formed. (*Phot. Korr.*, 1920, **57**, 239; abst. *J.S. C. I.*, 1921, **40**, 27A; *Sci. Tech. Ind. Phot.*, 1921, **1**, 6).

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BROMOIL. — R. Namias, who has always been a strong advocate of this process, again recommends the following solution for the bleaching bath:—

Cupric sulphate cryst.	10 g
Potassium bromide	8 g
Chromic acid, pure cryst.	1 g
Water to	1000 ccm

With regard to the inks, he considers that they should be made only of litho varnish, pigment and dammar; it may be necessary to thin them down to be able to introduce them into tin tubes, and turpentine, toluol or benzol are the best diluents to use; but if these are used, then after the ink has been distributed on the palette it should be left for these diluents to evaporate; the turpentine requires about half-an-hour, but the others only a few minutes. He considers that the paper should be well sized, the emulsion thick and rich in silver and gelatine, and no hardening agent should be used. He suggests a novel way of treating the paper so that only the gelatine is moistened; it should be mounted on a sheet of glass by means of a 10 per cent solution of gelatine or a solution of 100 g of glue in 500 ccm water; the glue should be allowed to soak for some hours and then melted by heat, and after cooling, 300 ccm of denatured alcohol should be added. This must be heated each time for use. The bleached print should be blotted off with blotting paper, the back painted with the gelatine or glue solution, and at once applied to the sheet of glass, which should be slightly larger than the print, and allowed to dry. It should be moistened with a mixture of equal volumes of glycerine and water containing 2 per cent of ammonia, the old collotype "etch." The advantage of this is that the print does not dry during inking up. (*Il Progresso Foto.*, 1920; *Bull. belge.*, 1920, **42**, 133.)

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AN HISTORICAL COLLECTION. — Circumstances have compelled Dr. J. M. Eder, the Director of the Lehr- und Versuchsanstalt fur Photographie in Vienna, to endeavor to sell the collection of historically interesting objects, relating to photography, which he has been collecting for 40 years. A subscription has been opened to secure these for the Société Francaise de Photographie. Eder's collection is famous and it is to be hoped that it will be possible for the same to be secured by some representative body *en bloc*.

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THE ACTION OF WEAK DEVELOPERS. — Lüppo-Cramer points out that amidol and its analogous compounds, tri-amido-toluol and tri-amido-phenol, act much more quickly in a very dilute solution than in a stronger one. This action was first noticed with gelatine plates (*Phot. Ind.*, 1920, 173) and was ascribed to the absorption of the hydrochloric acid of the amidol by the gelatine. The action has now been confirmed for amidol and metol with collodion emulsions, and the image appeared much more rapidly with developer concentrations of 0.05 than with 1 per cent. The fact that this phenomenon appears with collodion as well as gelatine is proof of the correctness of the assumption of the more rapid hydrolysis in dilute solutions than in strong (*Phot. Korr.*, 1921, **58**, 121).

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THE CARE OF THE HANDS. — A. Ulreich suggests the following preparations for treatment of the hands before dabbling in developers, etc., as a preventive of the action of solutions. Mix:

Glycerine	80 ccm
Agar-agar	1 g
Distilled water	50 ccm

Allow to digest for some hours with frequent agitation, then filter through muslin and mix on a water bath with the following:—

Sodium carbonate	3 g
Stearin	5 g
Olive oil	5 ccm
Water	80 ccm

Stir till a white ointment is formed. Rub this over the hands before starting work. To remove pyro stains, rub the places with:

Sodium sulphate	100 g
Chloride of lime	50 g
Water	100 ccm

or with

Hydrochloric acid	50 ccm
Oxalic acid	10 ccm
Phosphoric acid	30 ccm
Water	1000 ccm

and then wash in warm water. Metol poisoning can be combated with a mixture of equal parts of glycerine and spirits of camphor, with the addition of a few drops of phenol (carbolic acid). To remove silver satins, the same solutions as recommended for pyro are advised; and for uranium stains the application of liquid ammonia or potassium carbonate. Bichromate poisoning is said to be prevented by the use of a grease or ointment before starting work. (*Wien. Mitt.*, 1920, 195; abst. *Chim. Ind.*, 1921, **5**, 672.)

With regard to bichromate poisoning, it is an open question whether the remedy suggested is sufficient of a protection, and as this rarely appears except with those who are dabbling in bichromate all day and every day, it is now seldom heard of. The subject was dealt with in *Brit. J. Phot.* (1905, **52**, 362 and 382), and an ointment, recommended by Dr. Schleich, is quoted from *Mon. Phot.* as follows: 10 g of pure neutral soap are dissolved in 100 ccm water, on the water bath, and 100 g was added. After thorough mixing and cooling, 10 ccm of strong ammonia are added, and then 100 g lanolin or other similar fat. The mixture is then diluted with water to bring it to a suitable consistence. This should be rubbed over the hands before work, and the hands rinsed in water without wiping, so that a film of wax is left on the skin. This can be removed by washing with soap in the usual way. In a subsequent issue of the *B. J.* (1907, **54**,, 438), Dr. Riederer is quoted from *J.S. C. I.* as having recommended the use of 5% solution sodium bisulphite as an application for bichromatic sores. The use of this for destroying the last traces of bichromatics is well known.

ROUND WORLD EXCHANGE CLUB

We have received so many requests to resume this department that we have decided to do so under the following conditions:

The rules of the organization will be merely the rules of ordinary courtesy and fair-play. The director. will assume no responsibility beyond listing the names of members with details as to what they have and what they want in exchange. A member will have the opportunity of communicating with any other member and all details as to exchanges will be by mutual agreement. For the present we shall publish no list of members, exchange code or book of rules, but shall rely entirely upon the willingness of members to co-operate with others to make everything run smoothly. Any former member now rejoining who desires to retain his old number may do so by notifying the director to this effect. Details as to acceptance and refusal of prints, methods of sending prints, postcards, etc. will be found in the December issue and will be published from time to time in the future. New members may join at any time and their names will be listed and published as soon as possible. Those who have notified us of their intention of joining, up to the time of going to press, are —

488 (old number) Henry Scholz, 5656 Blakemore Street, Germantown, Pa. V. P. 3¼ x 4¼, 3¼ x 5½, 4 x 5, 5 x 7. Cyko, Velvet Green, General, including some World War pictures.

1073 David C. Goodyear, 222 W. 72nd Street, New York City. Photographs of old-time N. Y. Central locomotives, or of trains showing smoke effects.

1074 R. L. Welker, 1034 Cleveland Street, Kansas City, Kans. 2¼ x 3¼, 4 x 5, D. O. P. Landscapes. Landscapes or pictures of places of historic interest desired in return.

1075 Oscar V. Lacy, Havana, Cuba. 2¼ x 3¼, 3¼ x 4¼, 4 x 5, pictures of U. S. A., Cuba, Jamaica, B. W. I. and South America.

1076 J. H. Armstrong, 302 Portage Avenue, Sault Ste. Marie, Mich. 4 x 5, or 8 x 10, views of St. Mary's River and the famous Soo Locks, or any view of this city or vicinity.

1077 Benjamin F. Willard, 339 Claymont Street, Wilmington, Del. 3¼ x 4¼, 4 x 5, D. O. P. or P. O. P. or enlargements of historical views, landscapes, portraits, interiors and misc.

1078 Willard H. Harting, 934 East 179th St., New York City. Unmounted stereos of views, scenes, etc. Good work only.

1079 C. W. Fulford, 713 South 3rd Street, Wilmington, N. C. 3¼ x 4¼, D. O. P. General.

1080 Hugo H. Schroder, 527 W. Brown Street, Bettendorf, Iowa. 2¼ x 3¼ to 5 x 7. Developing papers, lantern slides of birds, nests, wild animals, flowers and other nature subjects.

1081 Louis R. Murray, 927 Ford Street, Ogdensburg, N. Y., any size up to 6 x 8, Bromide enlargements and D. O. P. pictorial subjects, mainly landscapes.

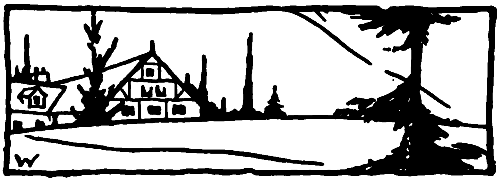
1082 C. R. Munns, Boscobel, Wisconsin. 5 x 7 contact prints, scenic and art pictures.

1083 Thomas C. Higgins, 147 Sumner Avenue, Springfield, Mass. 3¼ x 5½, contact prints, landscapes.

1084 Aug. Gaarz, 608 Mansfield Road, Cleburne, Texas. 5 x 7 and smaller, D. O. Paper, studies of the human form.

1085 Jacob Hurvitz, 10 Millmont Street, Boston 19, Mass. 2½ x 4¼, Zoo life.

1086 Edward C. Kimberly, 54 Sigourney Street, Bristol, Conn. 3A and 5 x 7 (Graflex) D. O. P Nature subjects.



QUESTIONS and ANSWERS

A. F. W., Habana, Cuba, asks for a rule for calculating the amount of depth before and behind a certain object within which the definition is up to the required standard. *Answer.* This is usually known as depth of definition and the rule for finding it is as follows — Let H be the hyperfocal distance (in inches) for the given lens and stop, D the distance (in inches) focused for. The nearest point of critical definition is (H x D) divided by (H + D) and the farthest point is (H x D) divided by H — D). To find the hyperfocal distance, square the focal length of the lens (in inches), multiply by 100 and divide by the *f* number.

W. E. B., Gladwin, Mich., asks where empty film spools can be sold in large quantities. "The Eastman and Ansco Company do not buy them, still they use each other's spools so they must be getting empty spools from some source. It seems a waste to destroy them when they can be used as well as new ones." *Answer.* There is no market for empty film spools. As taken in by the photo-finishers they represent a mixture of so many sizes and makes that the sorting would be an expensive job and many of them are sufficiently bent and damaged by handling to render their re-use impractical. These spools are made by automatic machinery in large quantities at a very low price. The statement that any film maker uses another maker's spools is absolutely incorrect, but the impression is so widespread that it is worth comment here. The finisher who says: "I found an Eastman Autographic film on an Ansco spool" does not stop to reflect that the spool the film comes to him on is not necessarily the one on which it was sold by the maker, but the spool belonging to a previous roll of film which was left in the camera for the new roll to be rolled onto.

D. S., Corunna, Mich., asks 1. Can glossy prints on D. O. P. be given a high polish by squeegeeing them on sheets of glass as well as on a ferrotype plate? 2. Where can the type C locomotive headlight lamp rated at 108 watts, 6 volts, 10 amperes, described in the article of A. M. Candy in the April 1920 number be obtained?

Answers. 1. Prints can be squeegeed on glass, but are much more likely to stick to this than to a ferrotype plate. The glass must be thoroughly cleaned each time and dusted with French chalk, which is not necessary with the ferrotype plate. 2. Any electric supply house can obtain locomotive headlight lamps for you from its regular lamp supply concern or in any case from the General Electric Co., or the Westinghouse Electric Co.

A. G., St. Cloud, Minn., asks for a solvent for india-rubber and for a formula for making a pliable paint for coating the inside of bellows. *Answer.* The best solvent for india-rubber is carbon disulphide (sometimes called carbon bisulphide). This is highly inflammable and must be used carefully. We believe that "Carbona" would also dissolve rubber, if so, it would be pleasanter and safer to use. Other solvents are — chloroform, benzene, and mineral naphtha. Making a solution of india-rubber is a slow process. The rubber must be finely shredded to begin with and must be left in the solvent for a considerable time. Often the careful application of heat in the form of a hot water bath is necessary and, even then, you do not get a true solution: the rubber does not dissolve quite in the same way as rosin does in alcohol, but forms a viscous mixture of the rubber and whatever solvent is used. The rubber swells and then forms a thick, viscous mixture.

With regard to a formula for making a pliable paint for coating the inside of bellows; if the leather is perished, we do not think that there is anything that will do much good. The only thing to do is to get new bellows. Here is a formula that has been recommended for renovating leather bellows and leather camera coverings generally: —

Sperm oil	3 oz.
Acetic acid	3 drams
Glycerine	3 drams
Oil of turpentine	½ oz.
Water to	15 oz.

Add the mixture slowly to the whites of 3 eggs, using an egg beater, and then add 3 oz. of denatured alcohol and about 100 grs. of aniline black dye or other color to match the color of the leather.

G. M., Perth Amboy, N. J., asks 1. How he can tell a flatly lighted negative with correct exposure from an overexposed negative, and an underexposed contrasty negative from a harshly lighted contrasty negative? 2. What is the meaning of density and intensity? 3. When the developer acts on an exposed plate do the silver grains immediately attain full blackness or only gradually? 4. Why will developer fog an underexposed plate? 5. How should a screen be placed between the light and the subject? 6. Can you get distortion after 8 feet? 7. Is *Artistic Lighting*, by Inglis and Tood, obtainable?

Answers. 1. An overexposed and underdeveloped negative is thin because the scale is much shortened. It may be difficult to tell this from a very flat subject taken on a cloudy day, but the shadows in a correctly exposed negative are likely to have more depth than in a bad overexposure. With underexposure shadow details are entirely lacking, but your harshly lighted subject will be much toned down by correct exposure and will show shadow detail. Correct exposure and development retain tone gradation throughout the scale, while incorrect exposure and development cause part of the values to be lost. If the missing values by some chance did not exist in the subject it is difficult to perceive their loss. 2. Density is, properly speaking, applied to the depth of deposit on a negative while intensity is strength of illumination. The word intensity is sometimes erroneously used for density. 3. As soon as the grains of silver are reduced to the metallic state they possess color, but as the most opaque object is transparent if the layer is thin enough, they can hardly be said to be black until they reach a certain size. They are however black when they became visible to the naked eye and gain in size only and not in color. 4. An underexposed photographic emulsion is comparatively insensitive to a developer of the strength usually used by photographers. A very slow plate will resist developer for a long period. There are however other causes than exposure to light which enable a developer to break down silver bromide, mechanical stresses, ultra violet light which may penetrate the apparatus, certain resinous emanations, radio, active emanations and over-ripening of the emulsions in sensitive plates, all enable developer to attack the emulsions, sometimes fogging it uniformly but frequently giving rise to weird shapes and markings. 5. Consult "How to Make Portraits," No. 6 of the Practical Photography Series. 6. The distortion produced by getting the subject too near the lens varies with the distance from the lens. The further the subject is from the camera up to a considerable distance the better the result from the point of view perspective. Eight feet is the arbitrary limit within which a satisfactory picture is almost impossible. 7. The illustrations of Inglis and Todd's "Artistic Lighting" were worn out by constant printing and could not be replaced. An attempt was made to substitute other pictures, but the book was no longer popular and it is now, we believe, out of print.

S.C. McL. Peoria, Ill., asks how to make albumen prints and crystoleums. *Answer.* The crystoleum process is so dead as to be almost forgotten, though thirty years ago it was highly prized and the so-called secrets were sold for large prices. A print from an ordinary negative was made on albumen paper and toned with gold in the usual way. It was then cemented to the back of a glass slab with Canada balsam rendered transparent with castor oil and roughly painted with oil colors on the back. The result was a rather gaudy, brilliant picture and paper weights thus prepared are still sold as souvenirs. Albumen paper is better for this process than some modern ones because it is more transparent, but Solio and thin bromide paper might be experimented with. We assume you can still get albumen from some of the old line stock houses, such as Gennert or Murphy, but as it has to be sensitized and fumed before printing, few care to experiment with it today.

Plates with Filter: Fixing. — S. J., Pisco, Peru, So. America asks (1) What would be the result of using ordinary plates with a filter? (2) Is it safe to fix plates in white light if they are washed slightly after development? *Answers.* 1. If you use an orange filter as you suggest with an ordinary plate you will cut off almost entirely the blue and violet rays. These are the only ones to which an ordinary plate is specially sensitive and with a deep filter you might increase the exposure enormously, even up to 100 times normal without attaining especially favorable results. The only way to get correct registration of reds, yellows and greens is to use a plate specially sensitised for these colors and then use a filter to cut down the excessive blue. For most ordinary landscape work however, you can get artistic results with an ordinary plate if you give full exposure and study your composition carefully. You will not get strong clouds this way and for these you may use the ortho plate and filter. 2. It is not advisable to fix in white light even if the plates are thoroughly washed after development. Theoretically, this is proper, but practically it seems to be quite difficult to wash out the last traces of developer, and fixing in the light with some developer present frequently results in dichroic fog or patches which will not completely fix out. Of course there is no need to wait in the darkroom until the plates are fixed, for if you have a tank it will do no harm to leave the plates in for some time after they are fixed and so as soon as they are all in the fixing bath, other work may be undertaken and the plates left in the hypo until it is convenient to take them out for washing.

E. E. W., Chester, Pa., is making an enlarger from a design given in AMERICAN PHOTOGRAPHY for May, 1921. He asks if it would be necessary or if it would improve the enlarger to have a pair of condensing lenses in addition to the reflector. *Answer.* It is not advisable or possible to combine a reflector with a condenser in enlarging apparatus. The condenser takes light from a point source nearly at its focus and sends it forward as parallel beams. A reflector does the same thing. Consequently when a reflector is used the light coming from it is already parallel and a condenser would concentrate it again to a cone, which is not what is desired. Only one of these two ways of making a light parallel can be used in a single enlarging apparatus. A condenser is better for a strong concentrated light, such as an arc light, while a reflector is better for a diffused light source, such as an incandescent light or a Welsbach light.

A. F. W., Havana, Cuba, asks whether the copper tank mentioned in our September issue can be used with a chrome alum fixing bath for both developing and fixing, and if not, what metal he should use. 2. What is the formula for computing a depth of focus table? *Answers. 1.* It is not advisable to use a copper tank for developing and also for fixing with an acid solution, because copper will reduce silver from some acid fixing baths thereby corroding the tank, and incidentally introduce copper salts into the fixing solution, which however would not necessarily be harmful in minute quantities. A tank which is to be used for both developing and fixing should preferably be nickel plated and carefully washed after each fixing operation. Most photographers have a feeling, however, that it is better to use separate tanks for developing and fixing, thereby avoiding the possibility of trouble, which is sure to come unless extreme cleanliness is practised.

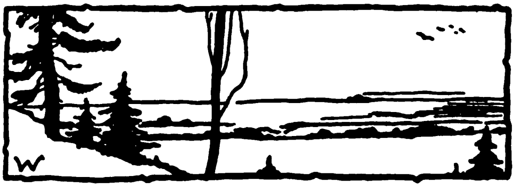
2. In calculating a table of hyperfocal distance it is necessary to decide first what circle of confusion must be adopted. The old-time practice was to take a circle of 1-100 of an inch which is satisfactory for lenses of 8 inches or more in diameter used on large plates. With modern anastigmats and very short focus lenses used for subsequent enlargement, it is advisable to choose a smaller circle of confusion, say 1-250 of an inch, while for cinematographic work 1-500 or more may have to be taken. Whatever the distance chosen, we represent the denominator or bottom half of the fraction by the letter D, the focal length of the lens by F, the stop to be used by A, and the formula is then as follows:

$$\text{Hyperfocal distance} = hf = \frac{F^2 \times D}{12 \times A}$$

The figure 12 is placed in the denominator to reduce the results from inches to feet. As an example let us assume that a 10-inch lens used at *f*:8 with a circle of confusion of 1-100 of an inch must be worked out. The answer is as follows:

$$\frac{10 \times 10 \times 100}{12 \times 8} = \frac{10{,}000}{96} = 104 \text{ ft.}$$

If the camera is focused on an object 104 feet away all objects from half this distance, that is 52 feet, up to infinity, will be in focus.



LOCAL MANIPULATION

There are many queer things about photography, but one of the queerest is the way in which it gets hold of a person so that he can't let go. He may let up occasionally, like the inebriate who permits himself lucid intervals of soberness so as to increase the zest of a subsequent spree, but letting go is an entirely different matter. Once the probationary period has been passed, there is, indeed, no possibility of escape. The novice may quit, the casual button-pusher may be sidetracked into other flowery paths where he can squander his cash with more riotous effect, but once the probationer has taken the veil — or should we say the focusing cloth? — he is committed for life to a lust for cameras and their use.

I remember meeting a friend one autumn afternoon under circumstances which will illustrate this point. It was at a period when some months of close preoccupation had deprived me of time for photographic diversion, and I was beginning to feel myself released at last (as I fondly imagined) from the terrible spell of the camera. Indeed, I had actually a condescending smile upon my classic features as this friend approached and I could see that he was laden with tripod and camera and was headed for the solitary wastes lying beyond the limits of the town.

We paused for greetings, and I made the usual fool inquiry as to whether he was going to take some pictures. Why is it that when you are carrying a camera people always ask you whether you are going to take pictures, whereas if you are carrying a Corona they invariably call you "doctor" and ask where the operation is? However, that is a digression.

My friend looked frightfully bored, but not, as it proved, so much because of the question as of the thoughts which the question evoked.

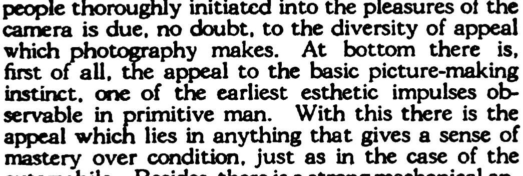
"Yes," he responded, "I am going out to take some more pictures, and heaven only known why I do it. I have already taken five million pictures, or approximately that. I have innumerable albums full of them, my desk is full of them, the attic is full of them. Long ago I gave up trying to keep track of my negatives, they are so many. An adequate filing system has become entirely out of the question;

for a collection as large as mine it would be much too expensive. Perhaps that is why I keep taking more pictures — it is so much easier to make a new negative than to find an old one, or, in fact, to remember an old one distinctly. Aside from that, I do not know why I keep on. The thing is beyond my control. The fever seizes me and I must go. If I didn't I should feel as lost as a New England deacon who has stayed away from the Thursday-night prayer meeting to attend the movies."

And what was the effect of this wholesome object lesson upon myself? After months of freedom from the tyranny of photographic habits, I went home, gave my battery of cameras a thoroughgoing inspection, and forthwith planned a camera trip for the ensuing Sunday!

Sometimes there is apparently a cure, but it is not a cure. The germ is there, latent, but ready to break forth whenever the system becomes weakened. I have talked of photography with men of large affairs, and they have gazed wistfully out of the window or into the wastebasket, whichever happened to be the more convenient, and I could see that they were yearning for a stretch of carefree time in which to indulge the picturemaking instinct once again. And some of them do find it, on a winter cruise to southern latitudes or fishing and hunting expeditions into the Canadian woods.

The persistency of photographic inclinations in people thoroughly initiated into the pleasures of the camera is due, no doubt, to the diversity of appeal which photography makes. At bottom there is, first of all, the appeal to the basic picture-making instinct, one of the earliest esthetic impulses observable in primitive man. With this there is the appeal which lies in anything that gives a sense of mastery over condition, just as in the case of the automobile. Besides, there is a strong mechanical appeal, and an appeal to skill. And, with all these, there are strong associations with interests already established in the mind. The parent is interested in his children, and photography enables him to preserve a faithful record of them. The architect can photograph houses and other buildings, the geologist, earth formations, the biologist, forms of life, the traveler, the scenes he wishes to remember and describe, the sportsman, the sports in which he takes so keen a pleasure, and so on ad infinitum. To me one of the most astonishing things is the variety of personal interests and occupations in which the camera may be a factor of value and importance, and I dare say that once it has become associated with such interests its hold is difficult to dislodge. — THE INTENSIFIER.



SKETCH-BOOK LEAVES

PINHOLE PHOTOGRAPHS

For a change, let us see what kind of pinhole photographs the Sketch-Book Club can get. Not many pinhole photographs seem to have been published in the magazine of late, and we ought to do something to keep the gentle art of pinhole photography from dying out.

If you want to go into this branch of effort thoroughly, there are articles on it in back numbers of the magazine and I think there is a number of *The Photo-Miniature* devoted to it. But a beginning can be made very easily without going into elaborate preparation, so long as you have a lens with front and back elements that can be easily unscrewed. In this case all you need to do, after removing the lens, is to insert in front of or behind the iris diaphragm a disc of black paper with a hole punched in the middle with a pin. Make this hole as clean as you can.

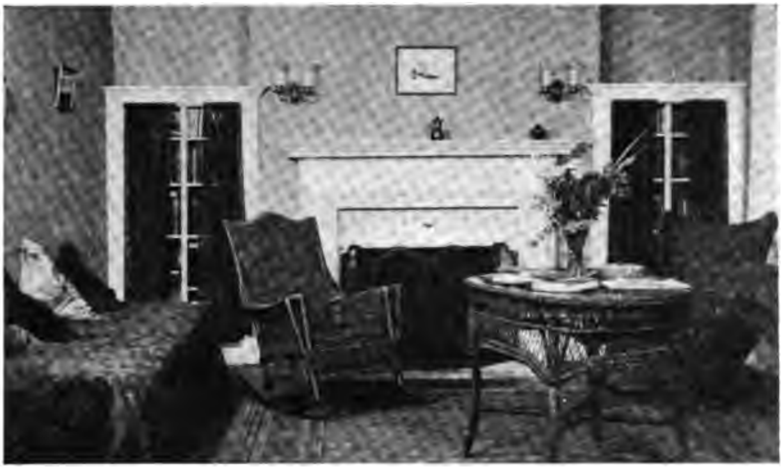
A plate camera is best, because it enables you to locate the image on the viewing screen, and this is rather important in pinhole photography, for although the image is faint, so that details are not clear, the scale of the image depends entirely on the distance between the pinhole and the focal plane. That is, the focal length of the pinhole varies. If you rack the lens standard out, you have the equivalent of a long-focus lens, giving a narrow angle of view — individual objects rendered large, but comparatively little of the subject included. If, on the other hand, you rack the lens standard back, say to the 100-foot point on the scale or behind it, you get a wide-angle effect, with objects rendered smaller but more of the subject included. Examination of the groundglass is important as a means of determining how far in or out to rack the lens standard. However, if you have only a roll-film camera without a plate back, you can get along by estimating the angle of view obtained at the different focusing distances.

With the pinhole, the picture is always in focus. It is like using the smallest possible stop with your lens, only more so.

The picture obtained with a pinhole is not wire-sharp, as with a lens at small opening. It is a diffused image, the diffusion varying from a slight softening, somewhat like that obtained with a Verito at the smaller apertures, to a rather fuzzy effect if the pinhole is too large. This will suggest the advisability of not punching the hole too big for the first attempt. It is easier to make a small hole bigger than to make a big hole smaller.

Exposures with a pinhole are necessarily long. Various tables have been worked out, but the best way is first to experiment a little. You can get some idea from figuring the exposure for the smallest stop of your lens and then comparing the size of this stop with your pinhole. Roughly speaking, give minutes with one where you would give seconds with the other. The exposure will be less if your pinhole is near the plate than if racked out, as the pinhole is relatively a large aperture when nearer the plate.

Learning to make pinhole photographs really has some value beyond that of experimentation. For instance, it shows you how to get certain kinds of views successfully under conditions that are sometimes exceedingly hard to meet. You may be stuck some day to make a picture of a house or church or office building because the most distant point of view obtainable is still too near for the angle of your lens. With a pinhole in place of the lens, you can in such cases get practically as wide an angle as you want, thus including everything. Also, if the view is on a street where traffic might be an objection with a lens it will not bother much with a pinhole, for the exposure is so long that the traffic, unless continuous, will not register at all.



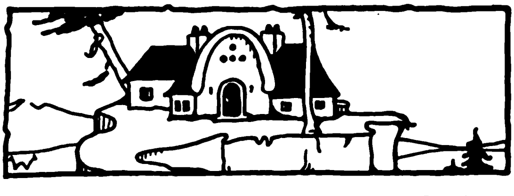
THE LIVING ROOM R. V. BROKAW

For the assignment under pinhole photography, let us try to get a street or road view, something with fairly definite lines to it, so that everyone can see what the effect of a pinhole is in the matter of definition. Send your picture or pictures to the Sketch-Book Editor as soon as possible.

THE ILLUSTRATIONS

"The Living Room," by Dr. R. V. Brokaw, was made with a 3A Kodak and *f*:7.7 anastigmat, the interesting point being that it was a night picture. The exposure, at *f*:16, was 20 minutes by the light of six 15-watt frosted Mazdas. The result is remarkably good, and suggests how effectively artificial light can be used for photographing interiors. The possibilities of indoor photography by this means have scarcely been touched.

No data are available for Mr. Barron's "Syrup Making," but the picture seems to have been made with a 4 x 5 camera. It is fairly typical of a large class of outdoor activities and interests which offer camera opportunities, but would be much more interesting if there were some sugar makers in the view.



THE QUESTION BOX

WINNING ANSWER TO OCTOBER QUESTION

What kind of negative will intensification help, and what is your method of intensification?

Intensification is best adapted to the negative having the required detail, but which is too thin and flat. The thin, contrasty, underexposed, overdeveloped negative will not benefit, for it lacks shadow and halftone detail. The highlight details, having been forced, are probably dense enough.

The method employed will depend upon the result desired. First, the negative should be free from fog. Perhaps a slight reduction with the ferricyanide and hypo reducer will help to clear it up. It should be thoroughly washed before any intensification is attempted; otherwise stain will probably appear.

The writer has found it desirable to intensify many copy negatives of line drawings. These are first bleached in a 10% solution of bichloride of mercury (corrosive sublimate — Poison) until white clear through. They are then washed for about fifteen minutes and then immersed in a solution of ammonia, about one ounce to sixteen ounces of water, until no further change of color takes place. They are then washed again for fifteen minutes and dried. Too long washing at either time or a strong stream striking the face of the negative causes fading or streaking. The blackening may also be done with a solution of sulphite of soda, about one ounce to twenty ounces of water. Developer may also be used.

The ammonia gives the most contrast. Negatives of any subject may be intensified as described. The bichloride of mercury intensifiers are likely to lack permanence. Another formula which is said to be more nearly permanent, but not quite so contrasty is:

Water	16 oz.
Sodium sulphite	240 grains
Mercuric iodide (red iodide)	120 grains
Hypo	60 grains

Dissolve in the order given. Immerse plate until desired density is reached, wash and dry. The solution may be saved and used a number of times, and negatives need not be thoroughly washed after fixing, a rinse being sufficient.

The sepia toning process may also be used. Bleach with ferricyanide and bromide and blacken with sodium sulphide.

Another method that has been recommended is to bleach with ferricyanide and bromide and redevelop in strong light with a pyro developer, weak in sulphite, so as to give the pyro stain.

Shadows may be intensified by staining with a red transparent watercolor. This does not alter the contrast. The color is put on with a brush, care being taken to work just to the outline, so as to leave neither a light line nor a dark line around the shadow.

SYRUP MAKING — ROBERT A. BARRON

One will get the best understanding of the intensification processes if one will take some negatives of small value and try each process. However, this should be remembered: the intensifier has no imagination and cannot put details in dark places unless the light through the lens has laid the foundation for it to build upon. The intensifier does build upon this foundation by depositing a grain of itself along with a grain of the silver and increasing the size of the grain. — E. K. Emslie.

FROM ANOTHER ANSWER

The following is an intensifier which I have used for a number of years.

Water	4 oz.
Saturated solution potassium bichromate	50 min.
Hydrochloric acid, c. p.	20 min.

The plate or film is first washed free of hypo, dried, and then bleached in this solution. It is then washed for about 15 minutes and developed in a developer made up of metol or metol and hydrochinon without bromide.

If the first treatment does not give enough density, the plate is washed free from developer, bleached, and redeveloped a second time.

Negatives intensified by this method do not spoil after years of storage, which I have found is more than can be said of negatives intensified with mercury.

In some cases a negative which is overexposed and underdeveloped may be improved by first treating with the ferricyanide reducer to remove fog and then intensifying to build up the faint image. I have found, however, that this method usually gives a negative lacking in contrast.

A negative which has been underexposed is hopeless as far as improvement by intensification or any other after-treatment is concerned. The extreme highlights of such a negative are the only parts, which show any detail worth mentioning, and intensification simply piles density onto these highlights. — K. R. Gripple.

JANUARY QUESTION FOR READERS

For what subjects is a lens shade of especial value in winter? State your experience with lens shades.

For the best answer to this Question received by February 15 a credit of $2.00 towards books of our publication will be awarded. Address the Question Editor, and please write on one side of paper only.

READERS' CRITICISMS

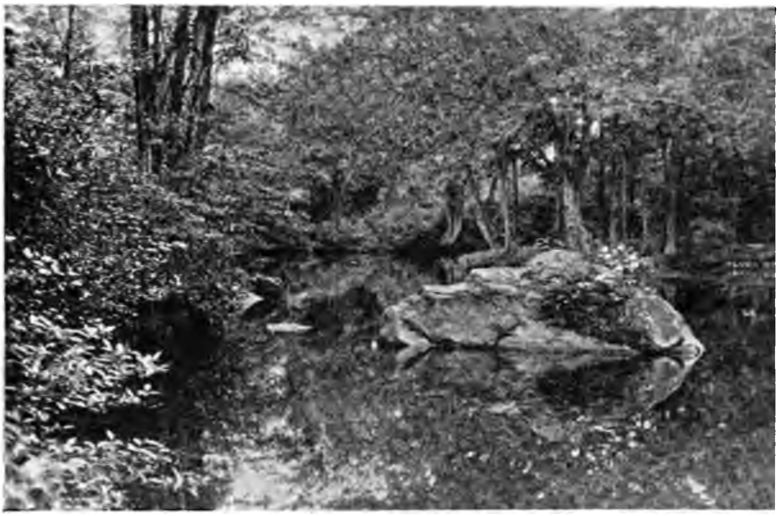
BEST CRITICISM OF PRINT NO. 22

Instead of producing a picture with soft blending of light and shade suggestive of evening light (the title is "When Evening Shadows Gather"), the photographer has made a spotty, confused composition that has nothing expressive of evening shadows or dark.

This is partly because the composition is faulty and partly because the light comes from the wrong direction, giving no value to the "gathering shadows" reflected in the water's surface.

The composition would be improved if a quarter of an inch were trimmed from the right side of the picture and a trifle less than a quarter of an inch from the bottom. The eye would then be led comfortably into the picture instead of going to the rock and being pulled with equal force to the right and left at the same time — a most distracting sensation. With the reflection of the sky eliminated from the foreground, the highlights would not be so spotty and make so confused a picture.

With careful trimming the composition is greatly simplified and the effect of the picture is feathery and



Criticism Print No. 22

soft. But it would be more harmonious if a larger aperture than *f*:22 had been allowed, and a softer, shorter development of the negative. This would give greater transparency to the lights and shadows. A softer printing paper and a warmer tone than Azo E Hard should be used.

To give a picture with the shadows reflecting in the water and falling along the bank — the shadows for the keynote — the best thing to do would be to take a picture with the camera faced in the opposite direction — the light in front. Handled in this way the picture would have a better quality of lighting. The shadows would come into more relief and the highlights would not predominate. The whole picture would have very much finer quality and an individuality which is now absent. — Eleanor L. Smith.

ANOTHER CRITICISM

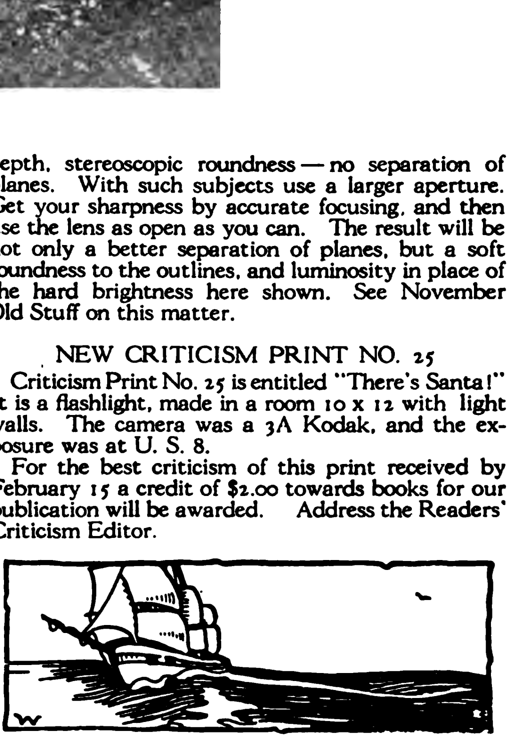
In Mr. Worden's "When Evening Shadows Gather," I believe there is far from enough shadow to bear out the title. It requires a second, perhaps a third glance to determine positively that there is water in the view, which is due to the monotone, lack of perspective and crowded effect of the objects utilized. The leaves shown in the lower left corner bring about most of the crowded effect, while the small portion of sky is the only feature which saves the print from a flat failure. Six-thirty P. M. is too late, especially without sunlight (as I understand was the case), to portray so closed-in and shaded a subject as I feel Mr. Worden had to deal with. I believe improvement could have been made by exposing at 10 A. M. or 2 P. M. with bright sun, thereby increasing tonal qualities; moving to right, to eliminate bushes on left of view, which would give a less crowded effect; moving back slightly to include more sky, all of which would give a fairly well balanced view and still come closer to bearing out the title. — Harold W. Temple.

Comments by Criticism Editor. — This print well illustrates the evil effects of excessive stopping down. You cannot see into it except by the familiar method of shutting one eye. There is a lack of depth, stereoscopic roundness — no separation of planes. With such subjects use a larger aperture. Get your sharpness by accurate focusing, and then use the lens as open as you can. The result will be not only a better separation of planes, but a soft roundness to the outlines, and luminosity in place of the hard brightness here shown. See November Old Stuff on this matter.

NEW CRITICISM PRINT NO. 25

Criticism Print No. 25 is entitled "There's Santa!" It is a flashlight, made in a room 10 x 12 with light walls. The camera was a 3A Kodak, and the exposure was at U. S. 8.

For the best criticism of this print received by February 15 a credit of $2.00 towards books for our publication will be awarded. Address the Readers' Criticism Editor.



OUR COMPETITIONS

SENIOR COMPETITION

The judging of the senior competition this month was perhaps the most arduous exercise of this nature which has been our lot since our monthly competitions were instituted. After the first survey of the prints, when those which seemed worthy of prizes or honorable mention on the basis of our usual standards were laid out for final elimination, the number was so much greater than usual and the quality so uniform, that the task seemed extremely difficult. By a process of elimination the prints were sifted down until a dozen remained from which to select three prizes. The portraiture seemed especially strong and it was decided that the first prize must go to a portrait rather than a landscape. The five portraits which remained in the class were all of such high merit that choice was difficult and it was finally decided that we would give three third prizes among these five portraits instead of the one usually given. Consideration of the remainder of the dozen showed a similar difficulty of choice and we eventually decided to close the year by awarding nine extra third prizes in the senior class. In addition to the prints reproduced in this issue and criticized below, extra third prizes were given as follows: "Miss B," Victor D. Elmere; "Queen Ann's Lace," J. H. Field; "Sisters," Salome E. Marckwardt; "Winter Sunshine," Alexander Murray; "In Old Whitby," J. Herbert Saunders; "Wet Day Pavements," Mrs. Eleanor L. Smith. We expect to reproduce the balance of these prints in later issues, but probably we shall not be able to award additional prizes in such number on future occasions.

The first prize was awarded to Jared Gardner for his portrait of a "Passamaquoddy Indian." In addition to the merits of excellent posing, pleasing lighting and general excellent workmanship, this picture has the added attraction of a picturesque costume attractively handled. It is an excellent character study and typically American. The subject was in Plymouth on the occasion of the Tercentenary Pageant, in which the Indians took part and was made in a studio at 11 A. M. in July, lighted with the aid of a spot light. The 8 x 10 Home Portrait camera was equipped with a 12-inch Wollensak Velostigmat lens. The exposure was 3 seconds at *f*:5.6 with 5 points diffusion, just enough to soften the contours and broaden the masses, without sacrificing strength. The 8 x 10 Portrait film was developed in pyro in a tank and printed on Artura Iris C. Page 13.

The second prize was awarded to Lyle A. Morse for "Alice," an outdoor portrait, in which the maker has taken full advantage of the charm of his subject and produced a pose reminiscent, in some respects, of the work of Greuze. Made in New York City with a 4 x 5 Corona camera equipped with a 9-inch Wollensak Verito lens. The exposure at 3.30 P. M. in June in good light was 1 second at *f*:4.5 with a K-3 filter. The Standard Orthonon plate was tanked in pyro and enlarged on bromide. Page 14.

The third prize was awarded to "Nellie Mc," a studio portrait made in Massachusetts by Herbert J. Harper. The handling of this subject, with the enormous hat sharply reflecting the light in a reticulated pattern and the loosely knit sweater allowing the light waist to show through in a similar series of spots, required careful lighting and exposure to give correct values in the light tones and avoid undue contrasts in the shadows. This problem has been excellently solved, and the hat turned into an excellent background for the profile by the use of a low viewpoint. The filling of the space is admirable. Made with a Seneca 5 x 7 View Camera fitted with Wollensak Series II Velostigmat of 8¼ inches' focus. The exposure was made indoors in August, using three 100 watt lamps for a flood light and one 100 watt lamp for a profile light. The exposure was 4 seconds at *f*:4.5 and the Eastman portrait film was developed in Monomet-hydro and enlarged on double weight Rough Matt Artura Carbon Black. Page 33.

New Criticism Print No. 25

An additional third prize was given to "Portrait of F. R. W." by F. D. Burt, a strong and characteristic portrait of a rugged character. This was made in western Massachusetts with a Century Stu camera equipped with a Series II 13-inch Turn Reich lens. The exposure was 3 seconds in bri light at 2 P. M. in October at *f*:8. The Eastm portrait film was developed in pyro and printed Artura Iris Grade B. Page 15.

Another third prize was given to "Autumn Riv by John N. Consdorf, a most charming landsca subtly and beautifully lighted and well showing so of the finest qualities of the soft focus lens. M with a 3¼ x 4¼ Graflex fitted with a 7-inch Woll sak Verito. The exposure in Chicago at 11 A. M October, in good light, was 1-40 second at *f*:4. Standard Orthonon plate was developed in py soda and enlarged on P. M. C. Bromide No. Page 37.

A third prize was also given to "Morning Worsh by Sotaro Saba. Here we have a misty early mo ing lighting which cuts down the contrasts terially and renders the shadows obscure and mys rious. The picture is interesting for its composit and quaint costumes. Made with a 9 x 12 Ernemann Reflex camera fitted with a 7-inch linear A4. The exposure in Japan at 7 A. M.

October in bright light, was 1-25 second at *f*:5.4. The Premo filmpack was developed in pyro-soda in a tray and enlarged on Eastman Portrait Bromide. Page 25.

Honorable Mentions were awarded as follows:

Home Portrait	F. E. Bronson
Outdoor Portrait	Kenneth D. Smith

Commendations were awarded as follows: —

The Road to the Woods	Lester C. Anderson
Portrait	H. K. Armura
When Shepherds Herd their Flocks by Night	Chas. J. Belden
Thrown off our Bow	Walter L. Bogert
Pathway to the Lake	Dr. L. Broe
August Landscape	Paul W. Bufler
Entrance to Wonderland	Stephen J. Bushya
Soldiers in the Making	J. E. Carson
The Mirror of Morn	Edwin B. Collins
In the Frost King's Grip	Geo. W. French
Playa Redondo	Gustave Glueckert
Sunset	Geo. W. Gould
Geranium	Walter R. Henry
On the East River	J. K. Hodges
Studying Composition	E. E. Jones
Landscape	W. Kitchen
Peanut Politics	Dr. E. L. H. McGinnis
Marcella	Clif Maupin
August Recollections	D. R. Miller
The Sentinel	Louis R. Murray
Church in the Sierra	Juventino Ocampo
The Morning Mail	Arthur Palme
Autumn	E. W. Quigley
Beautiful October	H. B. Rudolph
A Modern Fire Ranger	Walter Rutherford
Decorative	Clark H. Rutter
At the First Tree	J. A. Singler
Red Roses	James Thomson
Shadows	Herman D. Warren
Mother's Joy	Mrs. Rosella M. Weller
Some Pumpkins	Joseph F. Westgate
The Rural Mail	B. M. Whitlock
Now the Day is Ending, Night is Drawing Nigh	Wm. J. Wilson
The Angelus	Miss E. B. Wotkyns
The Lake in Autumn	Oliver P. Young

JUNIOR COMPETITION

The first prize in the junior competition was awarded to "Summer Idyl" by Theo. M. Fisher, a genre composition in which the figure emphasizes the strength and ruggedness of the tree and the vastness of the wide plain stretching away into illimitable distance. Made with a 5 x 7 Graphic camera fitted with a 9-inch Voigtlander Collinear lens. The exposure at 4 P. M. in October in sunlight was 1-5 second at *f*:16. The Standard Orthonon plate was developed in M. Q. and enlarged on P. M. C. No. 6 with a Wollensak Verito lens. Page 39.

The second prize was given to "Helping Grand-Daddy" by P. F. Squier, a well-composed home genre. The actors are attending strictly to business, which is always a strong point in the making of a picture of action. Made with a 2¼ x 3¼ Ansco Speedex fitted with 3½-inch Goerz Celor lens. The exposure in Worcester, Mass., at 10 A. M. in September in bright light, was 1-100 second at *f*:4.5 The Kodak film was tanked in pyro and enlarged on P. M. C. No. 3. Page 38.

Honorable Mentions were awarded as follows: —

Autumn	H. J. Brennan
Hand's Better'n Spoon	W. Keibel
Rotunda	James Owen
In June	Paul Richardson
Autumn	C. B. Rosher
Mill Ruins	Harold Winslow

Commendations were awarded as follows: —

Looking North toward Hudson's Bay	A. F. Adams
The Old Road	Carl F. Alm
A Cloudy Dawn	Wm. Edw. Barr
Feeding Chickens	John H. D. Blanke
The Thinker	Wm. Blatney
Leila	Ralph B. Bonwit
Icicles	Angeline R.Boughner
Child Study	Walter P. Bruning
The Silent Creek	Albert J. Burkett
Under the Live Oak	Horace T. G. Bush
At the Dock	P. A. Cazaubon
Through the Window	E. C. Channell
My Boy	Chester Demaree
Sun Path	J. S. Everett
Mother's Pride	John P. Geertz
Field & Stream	Alton H. Goud
Across the Pond	Thomas F. Griffin
Busybodies	Albert Hardman
The Rocky Gorge	Willard H. Harting
An Old Doorway	Ellen C. Hildebrand
One Evening on Sea	Stepehen E. Isaac
The Stone Mason	Jiro Ito
The Arch	John Janson
The Highway Bridge	G. G. Kanable
Construction	Carl Kettelle
Twilight	Edgar L. Kline
Friendly Enemies	Herbert Kraatz
Sentinels	W. W. Kuntz
The Homeward Path	Howard E. Louis
Nature's & Man's	R. K. McFarland
The Picture Book	W. McGrath
The Mission Cloisters	Franklin G. McIntosh
Across the Inlet	Geo. S. Matthews
Porch Photography	Rex. G. Mattice
Toward the Rising Sun	Arthur W. Moreau
The Express	Wm. Moyoha
Baby Smiles	Benj. C. Netts
Just Plain Posing	M. W. Osterweis
Evening on the River	Jno. Paton, Jr.
Shrimp Fishermen	Leroy H. Pompa
Brady's Leap	W. M. Powers
Crandall Creek	Fred W. Rapp
At Anchor	Howard K. Rowe
The Cascade	Wells F. Samson
Devil's Rock	C. E. Saunders
Peace	F. S. Scheetz
The Pool	Edw. J. Shepherd
The New Dining Room	Edwards H. Smith
In the Woods	Geo. A. Smith
Outdoor Portrait	A. M. Tomlinson
Tumbling Waters	J. F. Webster
October Brook	A. S. Workman
An Expression of Simplicity	A. S. Yoshida
The Poplar Tree	John B. Ziemanski

ROLL OF HONOR

FIRST PRIZE

J. H. Field 8

SECOND PRIZE

Geo. W. French 7
H. B. Rudolph 7
Alexander Murray 6
Kenneth D. Smith 6

THIRD PRIZE

J. Herbert Saunders 8
F. D. Burt 6
Jared Gardner 6
Wm. J. Wilson 6
W. R. Bradford 5

HONORABLE MENTION, SENIOR CLASS

Gustav Glueckert 11
Louis A. Dyar 10
A. F. France 10
W. Kitchen 10
Fred E. Crum 9
Sotaro Saba 9
Ira T. Bronson 8
Lawrence Baker 7
Edwin B. Collins 7
Herbert J. Harper 7
Carrol B. Neblette 6
Juventino Ocampo 6
Clark H. Rutter 6
Louis R. Murray 5
Robert P. Nute 5
Fred R. Raven 6
Walter Rutherford 5
Oliver P. Young 5

COMMENDATION, SENIOR CLASS

Walter L. Bogert 30
Chas. D. Meservey 21
James Thomson 19
C. B. Weed 19
Walter R. Henry 15
F. A. Northrup 15
Stephen Marsh 14
Elizabeth B. Wotkyns 13
Julien J. Proskauer 12
Walter Rutherford 11
C. M. Harris 10
Dr. E. L. C. McGinnis 10
Arthur Palme 10
Gus Schinkel 10
E. W. Quigley 9
H. K. Armura 8
Frank King 8
Leo Kraft 8
J. A. Singler 8
Herman D. Warren 8
J. K. Hodges 7
L. A. Morse 7
H. B. Neal 7
F. E. Bronson 6
Wm. S. Davis 6
E. E. Jones 6
B. M. Whitlock 6
Dr. L. Broe 5
Stephen J. Bushya 5
Victor D. Elmere 5
W. H. Finch 5
M. L. Shattuck 5
Arthur H. Travers 5
W. H. Waite 5

HONORABLE MENTION, JUNIOR CLASS

R. M. Hart 6
H. Bowly 5
Joseph F. Westgate 5

COMMENDATION, JUNIOR CLASS

F. H. Chant 20
John Ziemanski 20
W. Keibel 19
Jiro Ito 16
Garnet E. Jacques 16
Harvey C. Pendery 16
Edwards H. Smith 16
Howard E. Louis 15
Edw. L. Gilroy 14
P. F. Squier 14
L. Archambault 13
Geo. A. Beane, Jr. 13
Paul Richardson 13
Talbot Richardson 12
J. F. Webster 12
John Paton, Jr. 11
H. J. Brennan 10
P. A. Cazaubon 10
John N. Consdorf 10
Oliver Frantz 10
Stephen E. Isaac 10
J. W. Jeffers 10
W. W. Kuntz 10
Wm. Ludlum 10
Howard K. Rowe 10
Alfred S. Upton 10
Wm. E. Barr 9
Simon Jochamowitz 9
Irving S. Lovegrove 9
J. R. Frow 8
John P. Geertz 8
Geo. S. Matthews 8
A. C. Norton 8
Juan St. Cere 8
Ivan Sokoloff 8
B. F. Willard 8
John H. D. Blanke 7
A. W. Crawford 7
Chester Demaree 7
R. W. Garwood 7
C. V. Hewitt 7
V. Rose Huff 7
Rex G. Mattice 7
G. A. Smith 7
E. J. Williams 7
Walter P. Bruning 6
Robt. E. DeLand 6
Chas. T. Graves 6
Geo. F. Hogan 6
I. Komaniya 6
Wm. T. McGrath 6
Stephen J. Palickar 6
Mary E. Benham 5
Herbert L. Douglas 5
Geo. L. Heath 5
John Janson 5
Harry G. Pearce 5
Dr. C. W. Pratt 5
H. J. Mahlenbrock 9
M. W. Osterweis 9
The Walters 9
A. S. Workman 9
Marjorie Chater 8
Edwin A. Falk 8
Edwin A. Roberts 5
Ford E. Samuel 5
T. Shimizu 5
A. M. Tomlinson 5
John Tornello 5

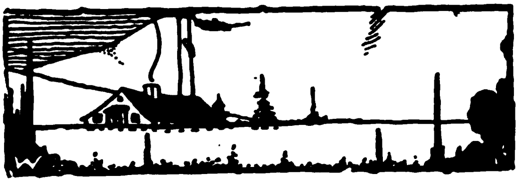
OUR ILLUSTRATIONS

Of the portraits on pages 3, 5, 9, 23, 27 and the landscape on page 29, it is hardly necessary to give detailed criticism. Their maker, Charles Henry Davis of New York, is one of the best known portrait photographers of that city, a veteran of the profession and a past master of technic and composition. His exhibition at The Camera Club, New York, during October, from which these pictures were selected, was deservedly one of the most popular held in the club rooms for many years. Mr. Davis knows how to make his pictures human and attractive without losing in artistic interest in the slightest degree. They show accurate analysis of character and a strong presentation of the salient features of the subject.

"Nocturne," by P. A. Dietz, is one of the most beautiful night pictures of New York which has come to our attention. This picture was awarded an honorable mention in the recent competition of the New York Evening Post, and the maker was kind enough to let us have a copy for reproduction. Page 7.

The beautiful snow crystals reproduced on page 11 are a few from the many hundreds which have been photographed over a period of more than a quarter of a century by their maker. Pursuing his work with unvarying assiduity through the winter storms of a generation, he has achieved world-wide fame and made a greater contribution to our knowledge of this subject than any other investigator. His pictures are in the collections of scientific investigators and institutions throughout the world and we feel sure that our readers will be gratified by the helpful article which Mr. Bentley has written for us.

The three pictures on page 31, 35 and 41, selected from the recent Members' Exhibition of The Camera Club, New York, are fair examples of the versatility and power displayed in the work of this metropolitan club. Its members' exhibitions are always interesting and we esteem it a privilege to be able to reproduce the work of the club members from year to year.



NOTES AND NEWS

Pictorial Landscape Photography, by the Photo Pictorialists of Buffalo, with 53 illustrations by members of the Society. American Photographic Publishing Company, Boston, Mass. $3.50 net.

The Photo Pictorialists of Buffalo was originally composed of eight members, G. Edwin Keller, Edward B. Sides, Charles A. Booz, Oscar C. Anthony, Will A. Hatch, John M. Schreck, S. S. Lloyd and W. H. Porterfield, the secretary, all of whom were residents of Buffalo. Two additional members came in later, F. Austin Lidbury and Augustus J. J. Thibaudeau, of Niagara Falls. From about 1905 to the fateful year 1914 these ten men worked together as a group, making pictures that were hung on the walls of exhibitions in America and abroad and contributing to the photographic magazines illustrated articles that helped very much to stimulate pictorial photography. From June 1909 to January 1910 a series of eight articles on Pictorial Landscape Photography, contributed and illustrated by the Photo Pictorialists of Buffalo, was published in AMERICAN PHOTOGRAPHY. The interest in these articles was so great and so many requests have been received for copies of the issues containing them that the publishers have revised these articles with judgment matured by the passage of twelve years and have given them and the illustrations permanent form in one of the most attractive volumes of the year. Large pages, 7 x 10, with wide margins and easily readable type and the arrangement of the pictures in six groups instead of scattering them are features that make perusal easy and enjoyable. Chapter 1 deals with the nature and scope of pictorial photography. Chapter 2 contains some practical notes on equipment, chapter 3 deals with field tactics and chapter 4 with the negative and its enlargement. In chapter 5 the modification of the negative is discussed, chapters 6 and 7 are devoted to carbon and other printing processes and chapter 8 to the presentation of the print. There are four appendices, all from articles that have been published in AMERICAN PHOTOGRAPHY. A, The Color of the Print, by F. Austin Lidbury. B The Advantages of Small Groups of Workers. C. Multiple Gum Printing, by Paul Lewis Anderson, and and D, Gum-Bromide Printing by William S. Davis. There is also a table of contents, a list of illustrations and a comprehensive index. This is a book that every pictorialist and every would-be pictorialist should possess, not only because of its intrinsic worth and beauty but because the information contained in it is so thoroughly practical and helpful. The secret of success in artistic work of any kind is very largely the application of common sense. In pictorial photography this is just as necessary as in any other branch of creative art. The pictures reproduced, all of which are thoroughly typical examples of the work produced by the group of enthusiasts, are refreshingly sane in subject and treatment, there is none of the now so frequent striving after the merely grotesque and bizarre. Some of them are signed by the Photo Pictorialists of Buffalo as a group, and some by individual workers. The book defines pictorial landscape photography, tells what apparatus is needed, how to work in the field, how to develop and enlarge the negative, what to do to prepare it for exhibition. Full working details are given for three of the most valuable and flexible processes which permit free modification of the print, carbon, multiple gum and gum-bromide. The authors have justified their methods by their results, which have been exhibited all over the world.

* * * *

THE AMERICAN ANNUAL OF PHOTOGRAPHY, 1922. Vol. 36. Edited by Percy Y. Howe, New York, The American Annual of Photography, Inc. 1921, Price $1.75.

With its usual quota of 272 pages of reading matter and halftone illustrations and with 24 excellently printed inserts, the thirty-sixth volume of the American Annual of Photography is now published. The contributed articles are by leading workers, both amateur and professional, at home and abroad, and the variety of subjects and individuality of treatment demonstrate the wide field now covered by photography. Stereoscopic Photography, Radiography, Zoo Photography, five articles on Modern Printing Processes, Lantern Slide Painting, The Optics of Englarging, The Miniature Camera for Exhibition Work, are a few of the titles to be found among the three dozen contributed articles. This volume is one that should be on the shelves of every photographer.

* * * *

The Camera Club at the Boston Y. M. C. A. has recently been reorganized and regular meetings are being held on the first and third Fridays in each month. The president of the club is Mr. Hyman Levy and the treasurer is Mr. Howard J. Blake. The accommodations and facilities for work are ample and up-to-date; there are six darkrooms and a large printing room all fully equipped with running water and lights for exposing and developing, as well as a commodious and thoroughly adequate enlarging room. Many new members have already joined the reorganized club, but there is still room for more. Plans are under way for a permanent exhibition of members' work in the club headquarters and all indications point to a very successful season.

FORTHCOMING EXHIBITIONS

Place	Date	For information write to —
Pittsburgh Salon Closing date for entries February 6th, 1922	March 1st to March 31st, 1922	Mr. Charles K. Archer 1412 Carnegie Building Pittsburgh, Pa.
Pictorial Photographic Society of San Francisco, 1st Annual Salon of Photography	May 1922	H. A. Hussey, Salon Sec. 64 Pine Street, San Francisco, California
Portland Camera Club, Photographic Section of the Portland Society of Art. Annual Salon. Entries close Feb. 15th	March 3rd to April 2nd, 1922	O. P. T. Wish, Secretary Portland Society of Art Portland, Maine

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AMERICAN PHOTOGRAPHY

VOL. XVI BOSTON, MASS., FEBRUARY, 1922 No. 2

JUST PLAIN PRINTS

Prize Article, Literary Competition

AUGUST KRUG

THE photographer was showing his friend around the exhibition, and they stopped for a moment before an unusually effective snow-scene.

"Look at that!" exclaimed the friend. "Isn't that a dandy? What is it — a platinum print?"

"What, that?" replied the photographer. "I should say not. That's just a plain print."

What did he mean? His friend understood; I understood, and you understand too. "Plain print" has come to mean simply a print made on one of the many chloride or bromide developing-out papers now obtainable.

When I make the seemingly rash statement that ninety nine per cent of the photographic printing of the present day is done on what is popularly known as gaslight paper and its elder brother and ally, bromide paper, I do so without fear of successful contradiction, for two reasons: first, that sober thought will, in the absence of statistics, incline scoffers to agree with me, and, second, that the refuge of the mind-reader in the old story will always be open to me.

The mind-reader, you remember, held a folded slip of paper to his forehead and frowned with the sincerity of his concentration. It was at a vaudeville show. "I see the initials L. M.," he intoned slowly. "Is L. M. in the audience?"

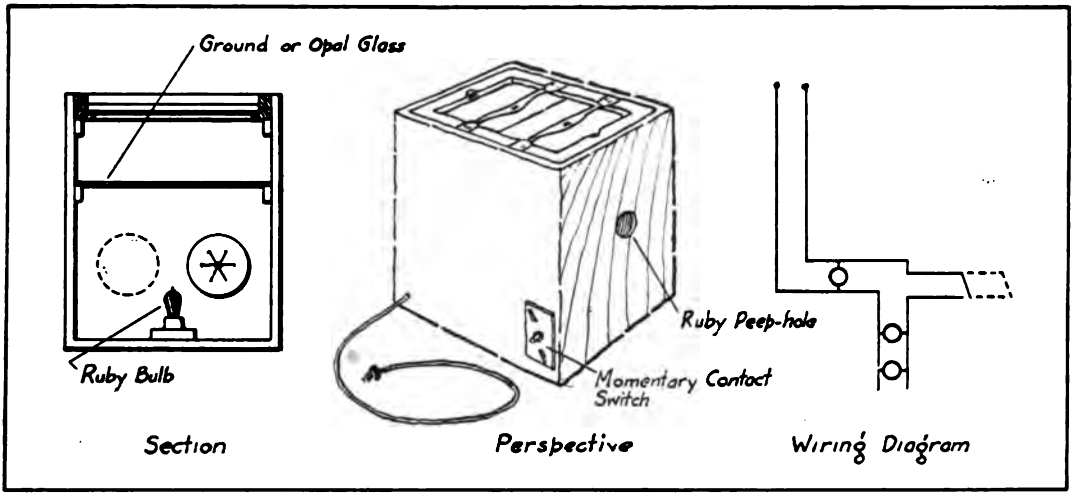
The man who delights in the discomfiture of earnest seekers after truth and devotes all his superior mental equipment to that end, raised his hand and waved it. "Here!" he shouted, nodding satisfiedly to his neighbors.

"L. M., I see your thought," asserted the mind-reader in measured accents. "You want to know how many hairs you have on your head." He stopped short and looked annoyed. "Do you consider that a fair question?" he wanted to know.

"Yes, I do!" proclaimed his tormentor triumphantly. "Answer it if you can!"

The mystic deliberated with himself. "Very well, then," he said finally. "There are exactly eight thousand, three hundred and forty seven hairs. Er — if you don't believe me, just count 'em."

Seriously, for all people save the comparatively few elect (among whom, gentle reader, we are numbered) the fifty-seven varieties of developing-out paper have entirely replaced all other printing processes. To such an extent has the usurpation been carried that the



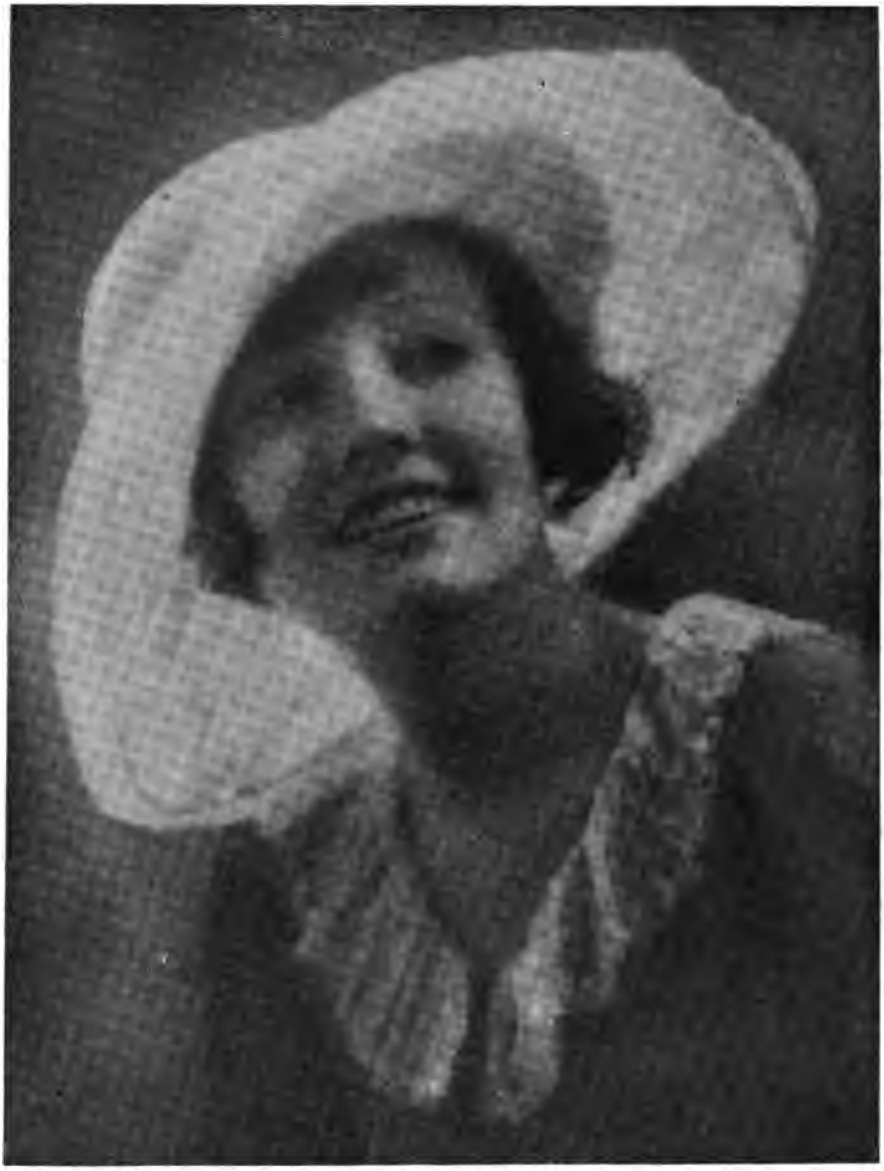
average person, unacquainted with the art of photography, is apt to exclaim, upon seeing a gum-print or a bromoil, "Why, it doesn't look like a photograph at all!" By which statement is meant, of course, that it doesn't look like a gaslight print at all. Since, then, gaslight printing *is* photography to such a great number, no further excuse should be required for an article the avowed purpose of which is to gather, edit and record a mass of miscellaneous information designed to be of assistance in securing the best possible prints on developing-out papers. It is to be feared that carelessness in printing and the indifferent work turned out by a great many finishing houses for the snap-shotter will finally result in the process falling into disrepute with pictorial workers, which would be a pity, for it is quite capable of holding its own with other pictorial straight mediums.

Parenthetically, why cannot something be done along the line of titles for the most popular process of them all? The present ones leave much to be desired. Look them over. Gaslight print? Won't do — I use electricity. Azo print? Won't do — I use Beezo. Developing-out paper print? Won't do — I'm a busy man. "Oh, well, 'plain print' suits me," votes the average man, and thus a most invidious title is saddled on the process which has so badly outdistanced all rivals for popular favor.

The immense variety of papers now obtainable may well be confusing to the inexperienced, but any particular brand and grade can quickly be allocated to its proper place by classifying it either according to its speed or its contrast characteristics. Perhaps as comprehensive, compact and fair a division as can be made is given in the following table:

1. Fast Bromides, such as Royal.
2. Slow Bromides, such as P. M. C. Contrast.
3. Fast Chloro-bromides such as Artura Carbon Black.
4. Gaslight, soft, such as Cyko red label.
5. Gaslight, medium, such as Rexo normal.
6. Gaslight, hard, such as Azò No. 4.
7. Slow Chlorides, such as Artura Iris.

The first three grades are intended for enlarging, and the last four primarily for printing by contact. This is not an infallible rule, however, as any one of the seven grades of paper can be used for either projected or contact work, given suitable working appliances. In an article of this size, it will be impossible to touch upon the enlarging side of the question, with all the special problems which printing by projection brings up. The omission



DORIS KENYON

NED VAN BUREN

Members' Exhibition, The Camera Club, New York

will enable us to consider contact printing in greater detail, and will in addition av confusion.

Given a negative from which the best print possible is to be made, it is first carefu scrutinized to determine in advance, without the annoyance of unnecessary, expensi experiments, the precise surface, grade of the paper and the constitution of the develo which will be used to make the prints.

Choice of the surface of the paper presents no difficulty. If the print is to be used reproduction work, a glossy paper is desirable but by no means essential, particularly cuts which are smaller in area than the print are to be made. For this purpose, smoo matt, white paper is just as good as the glossy and much less troublesome. In passi just a word of advice: if you use glossy paper, go the limit — squeegee the prints until th are as shiny as they can be made. A glossy print which is dried in the ordinary way i pathetic affair.

Smooth papers, then, are to be used with small negatives and those abounding fine detail. It is a curious fact, which could be readily explained, no doubt, by the psycho ogists, that prints on smooth paper are always, when held in the hand, submitted closer inspection than those on rough stock. This latter is more suitable for large neg tives, since it invests the prints with the charm of texture: it is safe to say, however, th papers which obtrude their texture at the expense of the print are undesirable from artistic point of view. The fact that a print is a good imitation of a grisaille painting canvas doesn't make it a good photograph.

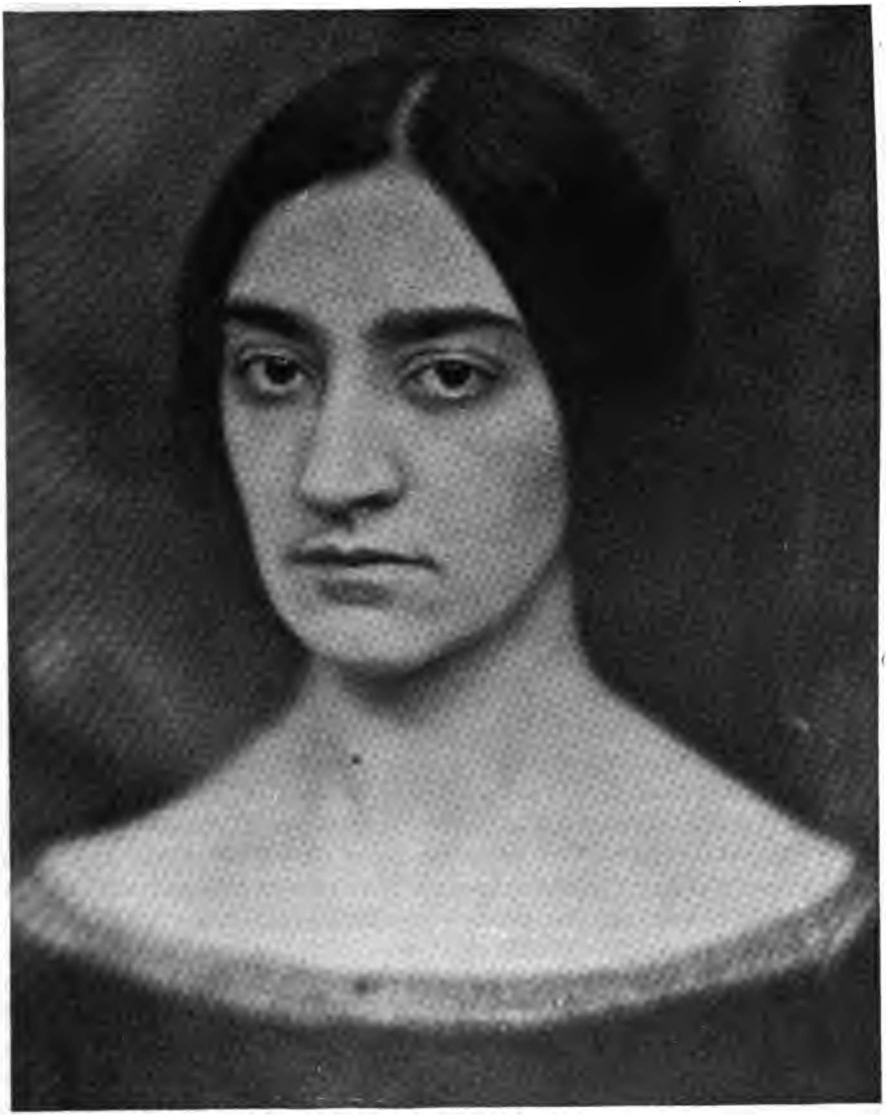
As regards color of stock, white can be used for anything. As manufactured present, it is not too cold in tone. Occasionally one will have a sunlit landscape or portrait which needs a cream or buff stock to do it justice — but don't make the mista of printing snow-scenes on such tinted paper. There is a pink paper obtainable — wonder who uses it?

The grade of paper to be used is determined by two things: primarily by the contras or amount of differentiation between the lights and the darks of the negative, and to lesser degree by the effect desired from the negative. Thus, while normal procedure wou be to print a soft negative on a normal or even a hard paper, it is conceivable that a pi torialist who wished to obtain an especially soft, low-toned print would employ one of t slow chloride papers, developing in a solution mixed to suit the conditions.

Ordinarily, though, normal negatives will continue to be printed on normal pape soft negatives will look to the harder varieties of paper to give that snap to the print whi the negative itself lacks; and the effect of the strong, contrasty negative will be ton down by the slower and softer-working papers.

It is the degree of development accorded to the negative which is the determinin factor in the problem of the grade of paper to be used. Broadly, underdeveloped neg tives will require contrasty paper: overdeveloped negatives must be printed on the soft grades: plates into which a normal set of gradations has been developed will give goo prints on any of the normal or soft grades of paper, according to the taste of the worke To sum up, for soft negatives use papers in classes 2 and 6, above: for normal negativ use classes 1, 3, 4, 5, and 7: and for contrasty, hard plates, use classes 1, 3, 4, and 7.

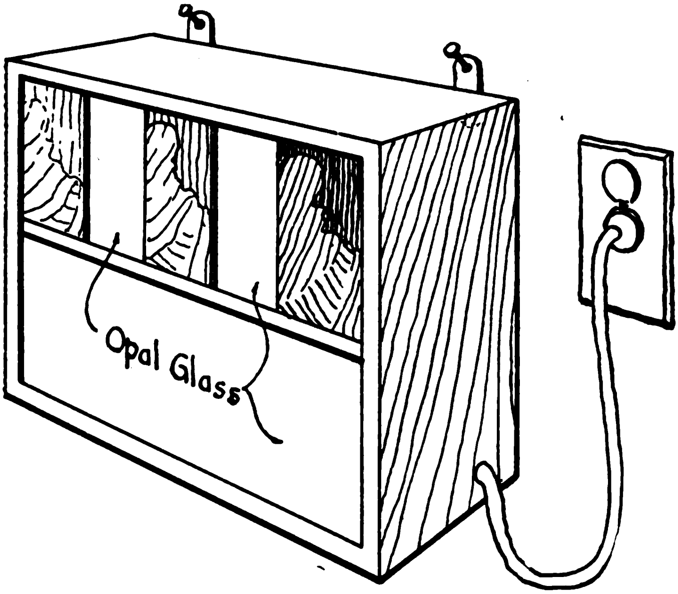
The paper having been chosen, let us turn our attention for a time to the workroo and the apparatus with which we shall make the prints We shall require a light print by and a light to develop by: these may well be one light, but modern efficie methods decree that there be two Then some means must be provided to hold th negative and paper in contact while the exposing light is doing its work. After the pri



PORTRAIT

NICKOLAS MURAY

Members' Exhibition, The Camera Club, New York



has been exposed, it passes through successive trays of developer, rinse and fixing bath on its way to the washing tank. These are the essentials. There are several appliances which are so useful as to be almost necessities, and they shall come in for their share of description.

First, as to the actual printing. This is accomplished in a nearly ideal manner by the printing machines now available in a plethora of styles and sizes. The paper is slapped into place, squashed with a motion of the foot, and emerges a second later perfectly prepared to yield up its latent image to the action of the developer. There are few amateurs who can afford the space required by such a machine, and the majority yet takes comfort in the fact that prints every whit as good (and in many cases better) can be made by the aid of the old-fashioned printing frame with the clamping back.

If electricity is available, as it now is mostly everywhere, for the advantage of uniformity of results it is unwise to depend on luck or make-shift measurements with a piece of knotted string to get the light distance accurately. It is much simpler to construct a box, into the top of which a printing frame is fitted, as shown in our sketch, so doing away with all uncertainty as to the constancy of the light. The printing frame need not be taken from the box with every print: the back is simply removed and the paper lifted out. It will be noticed that a "momentary contact" switch is indicated for the exposing switch: this handy affair works like the push-buttons we use for ringing door-bells, contact being made only so long as the finger is held on the button. A spring returns the button to its place and breaks the contact automatically. It is heavy in construction, ample for the current likely to be used in an exposing box of this sort, and while it is more expensive than the ordinary type of switch, it is very much easier to control the short exposures by its aid. If desired, an ordinary snap-switch may be cut in on the same line as shown dotted on the sketch, for the thirty-second exposures some of the slower grades of paper will require.

For those who have no electricity, the inverted gas mantle, under which the printing frame is propped on a pile of books, will reign supreme; the oil lamp, too, is not yet obsolete, nor will it be so long as Velox adver

THE STONE AGE L. M. A. ROY

American Photography Annual Competition
First Prize, Dublin, 1913

The exposure being the most important thing that can happen to a sheet of print-paper, it is most essential that it be accurate for the effect desired. Usually there is a highlight in the picture somewhere, which can be used as a guide — a sort of datum from which our photographic computations can be made. The aim, in ordinary printing, should be to get this highlight almost as white as the paper; in fact, if the highlight is only a small dot or patch, it can be truthfully represented by the white paper. Large areas should have a slight amount of reduced silver tinting them, to avoid a harsh and glaring appearance. The exposure, therefore, should be adjusted so that the highlights are correctly rendered, development taking place in a standard developer for a standard length of time. If the exposure given is so short that prolonged immersion in the developer is resorted to in an attempt to secure gradation in the lights, the print is said to be "forced." If the exposure is too great, the print must be snatched from the developer before this has had time to reduce to metallic form all the silver salt acted on by light. In either event the print is unsuccessful.

If the print has correctly exposed and developed highlights, the appearance of the shadows is an indication of whether the correct grade of paper has been used. For example, harsh, gradationless, dead-black shadows would signify too hard and contrasty a paper, and the remedy would be found either in the employment of a softer paper, reduction of the negative with persulphate of ammonia, or experiments with the weak bichromate solution before development.

The time of exposure must be determined by each worker for himself, as the individual negatives and the conditions under which they are printed vary so much. After the time has been set, however, for the different negatives and printing papers, the resourceful photographer will probably want to construct for himself a comparator box, to make future exposures as correct and free from guesswork as possible. Three negatives, one each of soft, medium and hard, are mounted before a large sheet of opal glass having enough light behind it to illuminate it properly. The new negatives can be matched up with this contrivance very quickly, and the exposure and the grade of the paper to be used easily determined by reference to the standard negatives, exposures for which are, of course, known. Even if the negative is not an exact match for one of the three standard, it is easy, by interpolation, to approximate the correct exposure.

It is sometimes recommended to increase the contrast of a print by lengthening the exposure and shortening the time of development correspondingly. However desirable this method may be in an emergency, its effect on the color of the print (particularly if subsequently sulphide-toned) should not permit it to take the place of the regular contrast papers, on the rare occasions when these are actually needed.

Every effort should be made to get the exposure as nearly correct as possible, for only in this way will the best prints be secured. Accuracy in this regard is tested as follows: the print, after its first appearance in the developer, will gradually build up to a certain density, and then seem to stop development for a time. A quarter of a minute shows no change in the image. If, at the time of this stoppage, the print presents the desired appearance, the exposure was correct. If underdone, evidenced by lack of gradation in the lights, the exposure was insufficient — double it on the next trial. Should the print flash up quickly, and blacken before you can act, cut the exposure in half, at least.

The printing speed of developing-out paper depends directly on the developer used. Anyone who has tried to make a large batch of prints with a single trayful of developer realizes this fact. As the developer is used more and more, it is necessary to incresae the exposure of prints from the same negative. Likewise, the experimenter who has tried to secure warm-toned prints by direct development knows that it is imperative to increase the exposure five to twenty times, according to the amount of bromide in the developer.

The chemical composition of the developer exerts a strong influence on the printing paper in the matter of color and contrast as well as regards speed. I give the following tested formulae, with their characteristic reactions, in the hope that they will be of assistance to those who rely implicitly, albeit blindly, on the M.Q. tube, as well as experienced workers:

DETAIL DEVELOPER (FOR SOFTNESS)

	Stock Solution	Dilute Solution
Water	80 oz.	32 oz.
Elon	60 gr.	12 gr.
Sodium sulphite	2 oz.	176 gr.
Hydrochinon	½ oz.	44 gr.
Sodium carbonate	1½ oz.	132 gr.
Potassium bromide	60 gr.	12 gr.

For use, take one part of the stock solution to one part of water. For convenience, a dilute solution is given for those who prefer to mix developer fresh each time. This formula is intended for soft working papers, such as Artura Iris, but it can be used for any paper desired. It is a slow developer, yielding prints of a warm olive tinge. Develop-

THE VALLEY VISTA GEORGE W. FRENCH
First Prize, December Senior Competition

ment takes place in from 1½ to 2 minutes, at 70 degrees. Care is necessary not to overexpose, as muddy prints are the result. The developer is not so suitable for prints which are to be toned, either by hypo-alum or redevelopment, but it can be used for this if slightly more concentrated, and the prints allowed to remain in it until it is certain that they have been fully developed.

Brilliant Developer (for contrast)	Stock Solution	Dilute Solution
Water	80 oz.	24 oz.
Elon	¼ oz.	12 gr.
Sodium sulphite	3 oz.	132 gr.
Hydrochinon	1 oz.	44 gr.
Sodium carbonate	5½ oz.	244 gr.
Potassium bromide	60 gr.	12 gr.

THE SWIMMING HOLE J. G. SARVE

American Photography Annual Competition

For use, take one part of the stock solution to two parts of water. This is nearly t
same developer as the foregoing, with, however, reduced allowance of sulphite and
creased carbonate, to give brilliant, snappy prints. Development takes place quick
owing to the increased carbonate, and is complete in 25 seconds at 70 degrees. The co
of the prints is blue-black at first, but as the developer is used this changes to a pure bla
If it is desired to use this formula for bromide papers, add one ounce of potassium bromi
to the stock instead of sixty grains as called for. This is a most satisfactory all-rou
developer, as it will give any color or gradation desired, but it does not keep very we
except in tightly corked, full bottles.

Some cannot use metol, others prefer a developer which is mixed up fresh eve
time it is used, and for these the following is given:

ACID AMIDOL

Water	20 oz.
Sodium sulphite	320 gr.
Sodium bisulphite	120 gr.
Amidol	60 gr.
Potassium bromide	5 gr.

Acid amidol is the developer par excellence for bromide papers, giving good blu

THE OLD CASTLE J. SITEK

Second Prize, December Junior Competition

black or pure black prints of surprising clarity and depth. It can also be used diluted and with a small amount of bromide added, for the soft chloride papers.

A timer is often used to determine the duration of the exposure: a decided tendency toward uniformity would result if one were used beside the developing tray. Development by time is fundamentally sound procedure, as evidenced by the success of the tank-development method: there is no valid reason why the practice should not be extended to papers as well. If print after print is developed until the solution quits on the job from sheer exhaustion, a timer will not be worth much — but then, neither will the prints. It is better to allow a certain amount of solution, say eight ounces of it for six five-by-sevens, throwing this away and replacing with fresh when the six, or their equivalent, have been developed.

Plenty of safe yellow light should be provided to examine the prints while they are in the developer. An unbelievable amount of illumination can be used, with perfect safety, if it is of the proper color. Red is safe, of course, but too dim. Yellow is safe, and the brightest light to the eye. If there is a special darkroom, an indirect lighting fixture may easily be made and suspended from the ceiling, supplemented by a lamp just in front of the development tray: for work at home, of course, the indirect light will have to be dispensed with. It is a good plan, when there are a number of prints of the same negative to be made, to take the first one from the fixing bath and to lay it on a tray which has been reversed bottom up, setting tray and print by the side of the developing tray, when it will be easy to see when to stop development.

A good yellow light is invaluable when sepia tones are to be secured by direct development. This is done when true sepia tones are wanted — the redeveloped print is called sepia by courtesy only. The following formula is given for experiment, with the caution that good negatives must be used, and the relation of exposure and developer exceptionally well thought out:

Warm-Tone Developer

Water	16 oz.
Paramidophenol	10 gr.
Hydrochinon	20 gr.
Sodium sulphite	1½ dr.
Sodium carbonate	1½ dr.
Saturated solution of potassium bromide	3 fl. dr.

An increase in exposure of from five to twenty times is required when this developer is used. It works well with Professional Cyko and Artura Iris.

Mention must be made of those handy little print tongs, by means of which it is possible to handle, develop and fix the prints without getting the hands into the solutions. It is a good idea to have three of them, marked respectively "Developer," "Rinse," and "Hypo," thus avoiding contamination of the solutions and, what is just as important, keeping the hands fit for the finer kinds of manipulation entailed by the pursuit of photography.

The presence of hydrochinon in a developer opens up the line of staining possibilities which has not as yet been touched upon. There would be no use in considering each sort of stain and analyzing it for cause and remedy. Most stains are the result of sheer carelessness. It is sufficient for us to know that given fresh paper, new developer mixed according to formula, a proper rinse, an active, clean fixing bath, and the correct amount of intelligent supervision, there will be no serious trouble from stains. If you use old, discolored hypo, you are simply inviting stains. If you remove the print from the developer to hold it in your hand for inspection, don't be surprised to see your hand outlined in a stubborn yellow-brown stain image on the face of the print. Stains are mostly oxidation products; if the print is kept beneath the surface of the solutions, the oxygen of the air can have no effect upon it, stains thus being reduced to the minimum.

For the rinsing bath, it is generally recommended to use a weak acetic acid solution. This is effective in that it stops development, but its action on the fixing bath is problematical. A better acid stop bath is made by dissolving an ounce of sodium bisulphite in each quart of water. The sulphurous acid resulting will not decompose the hypo. The print should be allowed to remain in the stop bath for at least ten seconds, to permit complete neutralization of the alkali in the developer.

A fixing bath which is milky, scummy or frothy is not to be depended on. For prints which are intended to be of more than passing interest it is the poorest kind of economy to use ancient, overworked hypo solution. A print properly fixed does not need an immense amount of washing to render it permanent. There is a comforting lack of slipperiness about a print immersed in a properly compounded acid hypo bath. Ten minutes in fresh solution, allowed to act all the time on the face of the print, is ample time to fix development papers completely. Complete fixation of all the prints should not be expected if they are piled into a heap and allowed to remain so for the allotted time.

The usual strength of hypo solution used for gaslight prints is two pounds of the

THE WANDERER LYLE A. MORSE

Second Prize, December Senior Competition

crystals to a gallon of warm water. To the solution is added three ounces (more if necessary in summer) of a hardener compounded as follows:

ACID HARDENER

Water	8 oz.
Acetic acid, 28%	8 oz.
White alum	1½ oz.
Sodium sulphite	1½ oz.

Make sure the alum is thoroughly dissolved before adding the sulphite.

When hypo has started to decompose, it is apt to leave its mark on the prints in the form of a white, powdery deposit, visible after the print is dried. Ordinary washing will not remove this: it is insoluble in water and alcohol. Try rubbing with a wad of cotton soaked in a strong sodium carbonate solution, washing well, afterward, to remove th carbonate. The wash water is sometimes blamed for this deposit, but the fault lies, I believe, with the fixing bath.

The hypo having done its work, it is now necessary to remove it from the gelatine, s that the image may be considered stable. Washing in running water is a good method t do this, if the prints are kept separated and the water is paid for by somebody else: soaking the prints in several successive changes of water, working them about with the hands and *letting them drain* between changes, is just as effective and more saving of water.

For the gaslight papers with hard, tough coatings, like Azo and Artura, the hypo eliminator known as Hypono is good. It saves time and water, and the assurance tha the prints are properly taken care of is worth more than the small sum asked for th chemical. Its employment on bromide papers, though, is risky business.

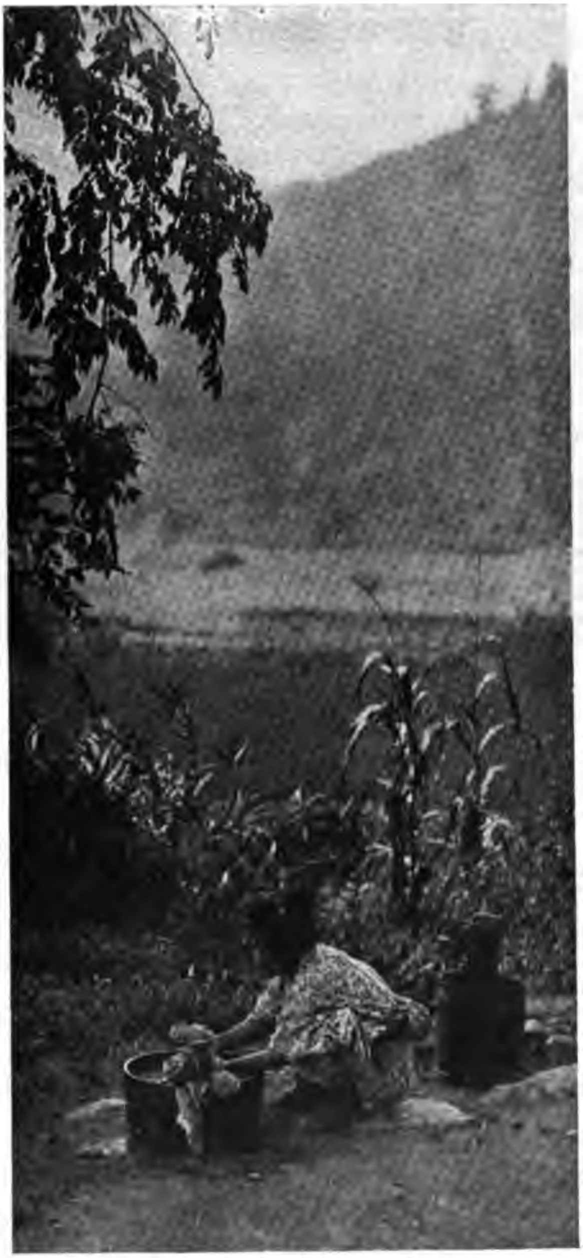
A small batch of prints can be taken from the wash water, the superfluous wate blotted off, and the prints then spread out, face up, on newspapers, cloth stretchers, o whatever happens to be clean and handy. Single weight prints will curl up to some extent in drying, but they are readily flattened out by drawing them over the smooth edg of a table, print-trimmer, or a door. Double weight papers dry nearly flat. After the have been dried and straightened, they can be piled up and put in a letter press or beneat a weight for a day or so, when they will be as flat as could be desired.

Large batches are collated under water, brought out dripping, and a squeegee applie not too vigorously. A few blotters are added to the heap, above and below, and the whol placed in a letter-press and screwed up tight. This squeezes out most of the water, a well as if blotters had been used between the prints. Prints are then laid out to dry a recommended above. Large prints dry more evenly and with less tendency to curl i they are suspended by clips from two upper corners.

With papers having a soft emulsion, it is imperative that no water should collect o the surface of the print in the form of pools or drops while it is drying, since their presenc will be evident on the dried picture in the way of marks which cannot be gotten rid o except by retouching. Prevention is better than cure.

Now that we have followed a sheet of printing paper from the package through th routine of exposure, development, rinsing, fixing, washing and drying, it is time for thes jottings to draw to a close. The subject is not exhausted, however. We have no touched on the many methods available to change the color of the silver image or th gelatine base: nor have we detailed the printers, washers, dryers, and all the othe devices which make the work of printing easier. The special kinds of paper, too, tissu parchment, and green printing among them, all will be deprived of their just privilege t be mentioned.

Before I write Finis, however, I would like to make an appeal in behalf of this proce we abuse so freely. Simply because the making of a "plain print" is such an easy matte if only because the materials are inexpensive and the time consumed negligible, is that no the more reason why we should be careful and conscientious in our printing? Why us half a dozen sheets of paper to make one print when one sheet plus a little thought will d it as well, and much more quickly? Let us have more respect for the process which do our "dirty work" — which gives us prints from the thinnest as well as the densest negatives we make, with a versatility possessed by no other medium. Let us respect it, I repeat — the reward will come immediately as our "plain prints" improve in quality.



A BRIGHT DAY AFTER RAIN

Sotaro Saba

Third Prize, December Senior Competition

DENUDING HER COUNTENANCE VIA THE DEPILATORY ROUTE

W. W. CLENDENIN

THE ART AND TECHNIQUE OF FELINE PHOTOGRAPHY

CLENDENIN AND CONNELL

VOLUMINOUS reports have often been indited on the care and patience requisite to the successful stalking and portrayal of that highly positive character — the family feline. These articles have, however, usually been written by men to whom Papa Fraunhofer's blue line was a remote menace. Neither had they given the effect of the nodal points of their lens on the equivalent focus any great amount of dissection. This effect is especially and particularly pronounced in the wide-angle, soft-focus, anastigmat so much in vogue to-day. It (the effect) is of great strategic importance, as the difference between the "visual focus" and the "chemical focus" with these lenses is in the ratio: as soup is to nuts.

So it is the purpose of the present writers to present an article dealing primarily with the artistic side of the problem, but with such a large modicum of the technical side as we are able to glean from the ununderstandable index to Mr. Cassell's famous commercial-minded Cyclopedia. Therefore for those few hardy souls who in a moment of weakness, such as all handsome heroes are prone to have, desire and determine to photograph the family tabby, these few kindly suggestions are added in order that the *modus operandi* used in producing such masterpieces as illustrate this magnificent monograph will be as transparent as anything to all.

The projectional velocity of the said feline will undoubtedly be the first difficulty to be encountered. It is liable, quite liable, to agitate or may even seriously disturb the tranquillity of soul of the novice. However, the preservation of one's artistic temperament is vitally essential to the successful perpetration of a cattish work of art.

THE DICER WILL CONNELL

LENA WILL CONNELL

EGYPTIANESQUE W. W. CLENDENIN

HIS FAMILY TREE W. W. CLENDENIN

Now in order to mitigate in some degree this particular evil it has been the custom of the authors to carefully nail three of pussy's feet to a thick, soft, yellow pine plank of southern extraction. The remaining free paw is now painstakingly painted with glue, after which with a reflex in your trusty left and an electrically operated flash in your equally or more so trusted right you may be able, if Lady Luck holds good, to obtain a charming portrait of the said cat actively engaged in denuding her countenance via the depilatory route.

This method has much to recommend it, inasmuch as out of some six dozen plates the authors achieved the accompanying five rare *coups de maitre.*

The matter of background is a highly delicate subject also, and can best be solved by the purchase of a large back-drop depicting, in great clarity, a double flight of marble stairs. This in itself holds great pictorial charm and can be used in the portrayal of kindred subjects such as home portraits of your lady-loves in their successive — no, not successful — peregrinations.

The matter of lighting is even more complex but can easily and perhaps best be dealt with by using a backlight of sunshine with a double bank of Cooper-Hewitts to illuminate the foreground. Of course, should this be impossible to the individual, the judicious use of four or five banquet flash-bags under similar circumstances can be depended upon to produce almost identical results. The exposure, naturally, is obtained by the use of some good meter such as the "Am-" or the "Moto-".

The posing of the subject is closely akin to the posing of the nude in art. It must have interpretative quality. Consequently, following the line of reasoning adopted by the leading nudists, we turn to the earlier start of antiquity and find that cats drink out of saucers and wash themselves with their tongues; also that in play they are especially addicted to anything that will roll — what could be sweeter — and we are given ample vindication and classic authority for "The Dicer."

So also, in another instance, we entitle it "Egyptianesque" and into our minds floods all the lore of the Pharaohs and the ancient cat-worship of the Nile.

But now, to come back. That phrase, "interpretative quality." How about "His Family Tree?" All the "boast of heraldry." He may have a coat of arms as well as a coat of fur.

And of "Lena" — but of "Lena" there is only a sad story of misplaced confidence to tell. She is no longer "Lena," he is "Steve."

To return to the technical side: after the exposure is made according to the course charted out above, the plate (specially sensitized, we forgot to mention, for infra red rays, so as to take something that you can't see) is removed from the plateholder and developed in an unrocked tray of straight hydrochinon by the light of an ultramarine safelight. If enough exposure has been given it should be completely cooked in about twenty minutes. It may then be transferred to a solution of plain hypo and fixed further. After this further fixing it is placed in the bathtub with the hot water faucet turned full on. Wash one hour and stand up to dry.

After drying, the plate — in order to remove such sundry water spots as may remain — is placed between two pieces of No. 20 sandpaper and clamped in the jaws of a large vise. Secure a firm grasp on the projecting edge of the plate with a pair of pliers and pull it out. It will be found to be entirely free from spots.

An enlargement on a Hard X Azo Post Card is all that remains to be done to produce a picture that no one — not even a Pictorialist — can doubt as regards pictorial quality and technical finesse.

A MORNING STROLL

L. A. Olsen

American Photography Annual Competition

EXHIBITION OF PICTORIAL PHOTOGRAPHY

By The Pictorial Photographers of America on the Occasion of the Opening of The Art Center, New York City

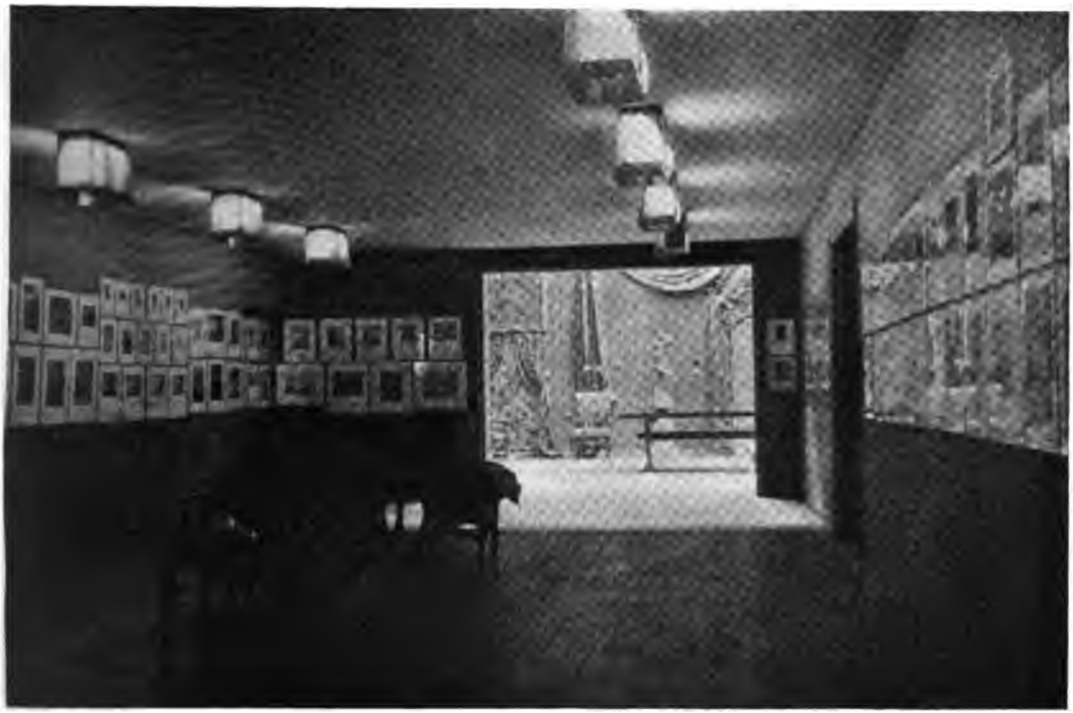
T. W. KILMER

TO ONE who has had the pleasure of viewing many a photographic show, it seems as though the present hanging of some one hundred and sixty-two prints exhibited by the P. P. A. reached the zenith of photographic art. The atmosphere of the beautifully lighted room even breathed softness and mystery. As we slowly went the rounds of the hall and studied the various prints, we could truly say that photography as an art has surely advanced. Great credit is due the hanging committee for their keen judgment in the harmonious placing of prints, as the four walls sing of harmony. There were eighty-six exhibitors representing all quarters of our country. The West was very well represented.

William A. Alcock had three prints, one of which, "Poor Old Pell," a bromoil, stood out as an excellent piece of work. Jessie Tarbox Beals was represented by an artatone of "Sheridan Square." Clark Blickensderfer of Denver had a very delicate bromide, "Above the Clouds." The work of Dr. A. D. Chaffee of New York, the society's new president, is so well known that naught but words of wonder and praise were heard as his four beautiful bromoils were admired; without doubt he is the world's bromoil master. Guy Gayler Clark showed an extremely artistic print of a camera-worker hurriedly changing holders while presumably his sitter held a coveted expression, therefore the title of "Hold It." James C. Coppola was represented by three prints, the best of which seemed to us to be one called "Marguerite," a red gum profile of a child. Edward R. Dickson had three prints, two of which were very fine decorative studies, "The Angelus of the Dance" and "The Dancers"; both would make exquisite mural decorations. Mrs. Helen Drew showed two portraits; the one of "Beppy" is exceedingly fine. Jerry D. Drew's "Chatham Square" and "Park Row" are true reproductions of the busy life of our great metropolis and show the artist's skill in their reproduction. Vernon E. Duroe has two prints, "My Mother" being a veritable gem seconded by "The School Yard."

John Paul Edwards, that sterling western worker, offers four landscapes; they are all examples of his consistent good work. Adelaide Wallach Ehrich shows two prints of interiors with figures. Eleanor Erving has one print entitled, "Afternoon Tea" with a very pleasing grouping of subjects. No show would be complete without some of Forman Hanna's Indian pictures; he has three prints showing him at his best. G. W. Harting is represented by three prints, "Sarah," "In the Studio Door," and "Through a Window," an incident of metropolitan life: all are good.

Eugene P. Henry shows two specimens of his work; his print entitled "October" is a soft, very beautiful tree study. Antoinette B. Hervey's "Colonial Dames" is a magnificent 11 x 14 print; Mrs. Hervey is also represented by, "Between the Columns." B. S. Horne of Princeton has a wonderful study of pattern and rectangles in his print, "The House Tops." Dr. Charles H. Jaeger's small 3 x 4 gums are very well known; they are contact prints from the original small film negatives: he shows three, "Street Scene, Gruyere," "The Wayside Shrine," and "Under the Pier. "T. W. Kilmer is represented by two large heads of men; they are both multiple gums. Sophie L. Lauffer shows three



THE EXHIBITION ROOM T. W. KILMER

prints, all good; one of which, "Marjorie," is a fine example of portraiture in a high key.

Francis O. Libby has three large, 11 x 14 green gums; the one of "Niagara the Magnificent" appearing to us to be his best. William E. McNaughton's landscapes of course are famous; here he shows four prints of unusual good quality. Ira W. Martin is represented by four prints; "Design" and "Dusk" being fine examples of his work. Henry Hoyt Moore shows two prints; his "Railway Station" shows sunbeams darting down through one of our large traffic terminals. Nickolas Muray's "Brigand" is a good piece of work, well balanced and of fine quality. Two prints which were very greatly admired were those of Joseph Petrocelli; "The Curb Market" being especially fine. Rabinovitch's "In the Spirit of Old Granada" is a splendid thing. O. C. Reiter of Pittsburgh has two prints, "The Husbandman" and "Danse des Arbres"; we always enjoy seeing Mr. Reiter's work. Dr. D. J. Ruzicka is represented by four prints in his usual good style; "The Rushing Tide" is extremely good. Dr. Henry S. Satterlee shows two examples of his work; "Flood Tide, Sunset" is his best one. Albert E. Schaaf has two very stirring war pictures; "The Second Division, Washington Square" and "27th Division Parade." Otto C. Schulte of San Francisco is represented by two prints, one of which, "Antoinette," is an 11 x 14 soft portrait in a very pleasing dark key. Thomas O. Sheckell of Salt Lake City, shows a good print, "In the Path of the Storm," followed by a very fine thing, "The Adventurers," which admirably gives the desired feeling of motion.

William Gordon Shields shows three fine gums; "Madonna of the Shadow" and "Full Blast in War Time" showing him at his best. Adele C. Shreve has a very beautiful decorative study; two storks are casting their shadows upon a wall; pattern and composition are excellent. The print is appropriately called, "Coming Events Cast Their Shadows Before."

A low keyed head, a portrait of Mlle. Maiene Copeau, by Marcia Stein, is an extremely fine thing. Karl Tausig's two large artatone portraits are good examples of his excellent work. Doris Ulmann shows three prints; her "War Correspondent" is full of character; "Columbia at Night" was also highly praised. Margaret Watkins has two of her now famous still lifes, depicting kitchen sinks and dishes. Walter M. Westervelt is represented by a single print, "The Toiler"; a fine piece of composition and technique. Clarence H. White shows four examples of his inimitable work, "Letitia Felix," "The Round Table," "Marion Reynolds" and "Nude."

William H. Zerbe has two very fine prints; "The Idler" and "The Smoke Eaters," the latter picture evidently obtained by him in newspaper work, showing firemen on a ladder literally eating smoke; it is a very praiseworthy bit of work and Mr. Zerbe is to be congratulated in getting the picture without personal harm. W. W. Zieg of Pittsburgh has two prints, one of which, "Castle Rock, Marblehead," a gum, is an exceedingly fine picture of a bold and rugged coast. It has in no way been an easy task only to touch upon some of the work which seemed to stand out and catch the attention; much more could be written of this exhibition: much could be said of every print in the show. There was not even a mediocre one in the entire one hundred and sixty-two examples of photographic work. We are appending a hurried print of the spacious rooms of the P. P. A., where a dinner was held upon "P. P. A. Night" of the opening of the Art Center, at which over one hundred covers were laid. All in all, one may well be repaid by a careful study of each and every print in this exhibit, for one by one each carries its message to the observer through the medium of light, lens and sensitive surface.

CHOICE OF DEVELOPMENT PAPERS AND THE IMPOSSIBLE NEGATIVE

J. RONSON HALL

The MANUFACTURE of development papers has reached such a degree of perfection that it is claimed by some advertisement writers that good prints on these papers can be obtained from even hopeless negatives.

With the choice of grades offered by this type of paper, it certainly is possible to get first class prints from negatives that would be very difficult to handle with any other class of printing medium, but there are two very important considerations that must not be lost sight of: they are, that choosing the best grade of paper for a negative demands a degree of skill, experience, or artistic sense, and that there are impossible negatives from which no grade or kind of paper can give a good print.

Professional photographers of any standing may be relied on to produce negatives of more or less standard contrast and one grade of paper should cover most of their work, but commercial and amateur workers, whose negatives cover a wider range of subjects and are taken under varying conditions, need at least two grades, and two speeds also are often a convenience. To the amateur finisher or "D. & P." expert, three grades and two speeds are practically a necessity and some carry a greater selection than this.

Anything in the way of rules for the selection of suitable grades of paper may seem to be superfluous, but I have known many printers of experience who had never properly grasped the principle of fitting negative to paper so as to obtain normal prints with normal development. It is often thought that a vigorous paper is only for vigorous

IN PORT — OLIVER P. YOUNG

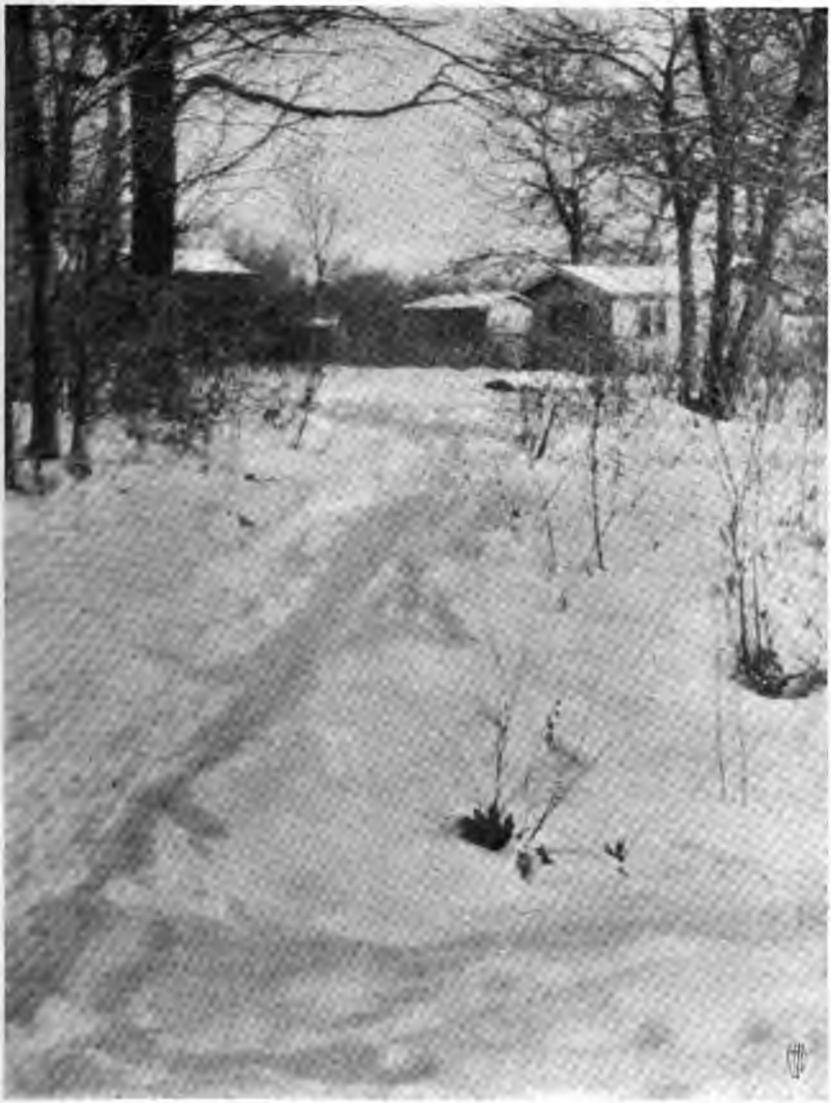
Third Prize, December Senior Competition

prints while a soft paper must necessarily give soft prints. This idea, being a half truth, is a more awkward thing than an out-and-out heresy. The characteristic properties of papers should always be considered as comparative. Thus, if we make three prints from a negative, on soft, normal, and vigorous papers, the one on soft paper will be softer than the other two and the one on vigorous paper will be harder than the other two, but whether any of the three will be definitely soft or vigorous will depend on the negative. Plenty of negatives are so flat that prints from them on the most vigorous papers would not be really vigorous, and a negative can be developed to such a *gamma* or degree of contrast that the softest paper cannot give a soft print from it with normal treatment. Normal papers should yield results equal to the negatives printed, which is as good as saying that they will as easily give soft or vigorous prints as normal ones.

When a negative is made up of a decided mixture of densities, ranging from clear glass to solidity, it is hard, and will consequently tend to give hard prints. This is all right for certain process jobs, but is not ideal for general photography. Now if we have a choice of papers it should be obvious that a soft paper will defeat the hardness of the negative to some extent. It is a case of two extremes producing a mean result. If on the other hand, a negative appears as a piece of grey, smoky glass, it is soft and flat, and will naturally yield a print of similar character. But as such prints are only wanted in special cases, it is up to the printer to brighten things up a little, and his brightest paper is his most vigorous one. Here again, the combination of two extremes will produce something like a normal result. The principle is very simple when a printer can recognize soft and hard negatives, but occasionally negatives come along which defy the eye to judge them. This means resorting to a test print, which will show the negative's character plainly.

A choice of speeds will assist the output where negatives of various densities have to be printed, but there is an alternative method of dealing with the situation. It is control of the printing light. To attempt to work from a batch of mixed negatives with one speed of paper and a fixed power of light is a very poor policy.

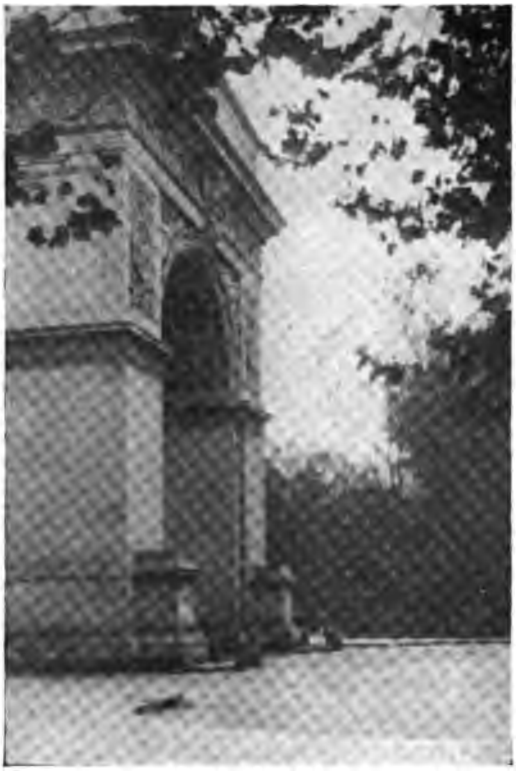
To describe the impossible negative, I must get a little closer to the scientific side of things. Negative emulsions are said to have "latitude," which means that they have a "period of correct representation or exposure," within the limits of which any image will be recorded in regular gradations. Now whatever is reproduced on the plate by light intensities which are *not* within the period of correct exposure, will *not* be recorded in regular gradations but in gradations that gradually increase in steepness towards the period of correct exposure. Thus when the light intensities from a scene are, by reason of underexposure, all too weak to reach the period of correct exposure, the image will not only be thin, it will be flat and uneven. The same applies to overexposure with the difference of density instead of thinness. But the latitude of modern emulsions is so long that millions of exposures which are not correct overlap it at one end or the other. This produces negatives of mixed gradations, some of which are even and some uneven. I recently had the pleasure of seeing a negative of an Arab in the desert. It was a fine bit of work, the lighting, modeling, and shadow detail of the swarthy face being superb. The photographer showed me a duplicate negative which had received a much shorter exposure. Both negatives had been tanked together in a solution made up for the benefit of the shorter exposed plate. Now observe the difference. The white burnoose in each case had photographed equally well, the only difference being that its image was a little thinner on one negative. But the face! No beautiful and decisive grading of detailed shadows into half tone and half tone into highlight! It was merely empty shadow and boney highlight. The negative had received sufficient exposure for the sunlit white burnoose to get within the period of correct representation but not enough for the dark face to get there also. In the good negative, an increased exposure had lifted the burnoose higher up in the latitude and so allowed the face to come in also. The thin negative was unprintable on any paper, for the paper that will yield good prints from unevenly graded negatives cannot be made.



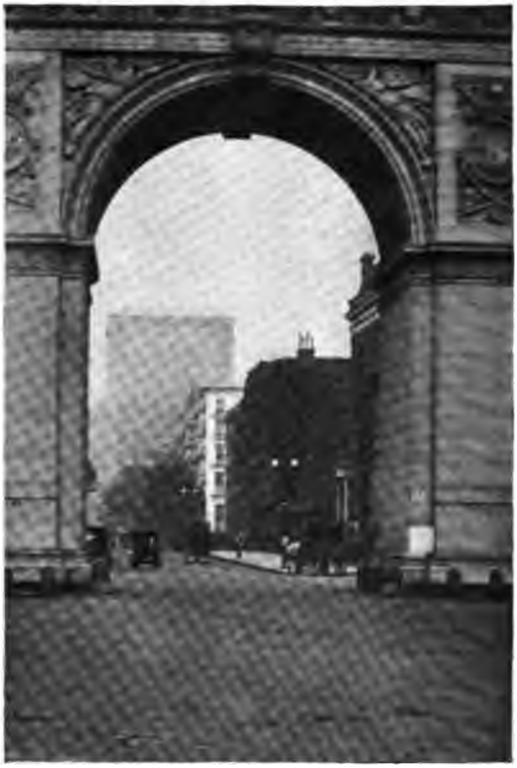
THE SNOWY PATH

EDWIN B. COLLINS

American Photography Annual Competition



IN WASHINGTON SQUARE W. S. DAVIS



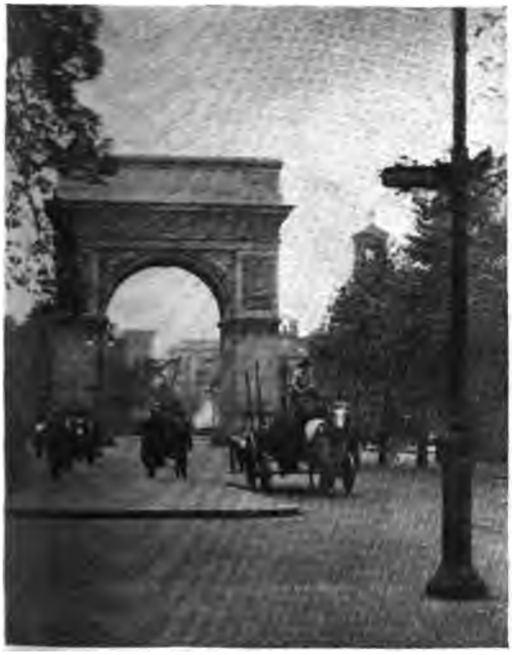
A GLIMPSE OF FIFTH AVENUE W. S. DAVIS

FROM DIFFERENT VIEWPOINTS

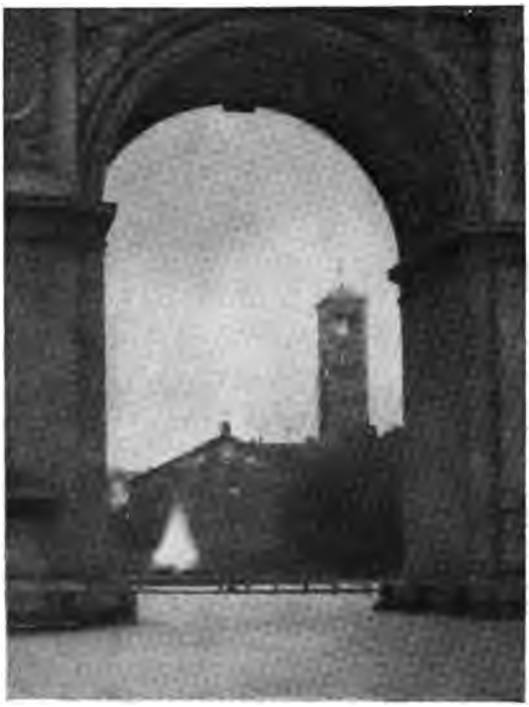
WILLIAM S. DAVIS

IT IS usual to advise the picture hunter to look for the *best viewpoint* from which to photograph a prospective subject, and in many cases this is sound advice, but not infrequently one comes across material for which no one "best viewpoint" really exists, inasmuch as investigation develops the possibility of securing equally effective, though varied, impressions from several distinctly different standpoints. In fact, what may be the best viewpoint at any particular time is largely determined by such circumstances as the lighting, atmospheric effect, and season of the year, and by studying the subject-matter under as wide a range of transient conditions as possible the most unexpected "effects" will often be discovered, so that a standpoint which shows the subject as commonplace, even ugly, at one time may prove ideal under different conditions.

To demonstrate the transforming power of variations in natural phenomena upon a single subject, Claude Monet, the celebrated French Impressionist, made a series of over forty paintings of a single lily pond in his garden, no two of which were quite alike. The photographer who wishes to develop his powers of observation might well select either a single object or a small bit of nature, such as a group of trees, within everyday reach, and thoughtfully observe the varied effects to be seen from different viewpoints throughout



LOWER FIFTH AVENUE W. S. DAVIS

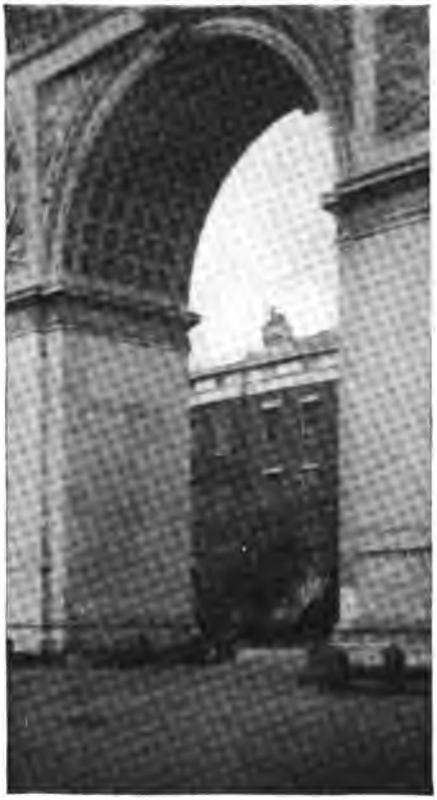


A WASHINGTON SQUARE VISTA W. S. DAVIS

the year in morning and afternoon light, sunshine, mist and storm, summer's foliage and winter's snows. Such a habit would be valuable practice, regardless of whether a camera was taken along or not, but no doubt the average individual would find it a greater incentive to careful observation of each effect if visual study was supplemented by a photograph for permanent reference, while an extended series of pictorial records would reveal most impressively the actual range of compositions and effects noted. Owing to the convenience with which a pocket-camera can be taken along and used on occasions when a larger instrument might not, the former will be found well adapted to serve the purpose of a photographic notebook, and for purposes of comparison the series of prints of a chosen subject had best be mounted in sequence in an individual booklet or album.

As a partial demonstration of the variety of compositions which may be produced when a single object constitutes the principal feature, a group of studies is here presented having for their motive the well-known Washington Arch which stands at the lower end of Fifth Avenue, New York City. I regret that this series is not more comprehensive of the possibilities latent in this subject, for such phases as rainy day, fog, snow, and night effects are lacking, but perhaps the fact that all those shown were made at one season of the year — midsummer — and under average atmospheric and lighting conditions without approaching duplication of general aspect makes the possibilities of a single subject more suggestive, since the reader can readily imagine how many additional studies could be secured by invoking the aid of striking transient conditions.

Our illustration, "Lower Fifth Avenue," was made from the corner of Washington News, just below Eighth Street, early on an August morning, the diffused light so frequently seen in town on a summer morning imparting a soft grey quality to the entire scene. While full of varied material characteristic of a street scene, the Arch, even though



WASHINGTON ARCH—AN IMPRESSION
W. S. DAVIS

in the middle-distance, dominates the composition, outlined as it is boldly against a light-toned sky.

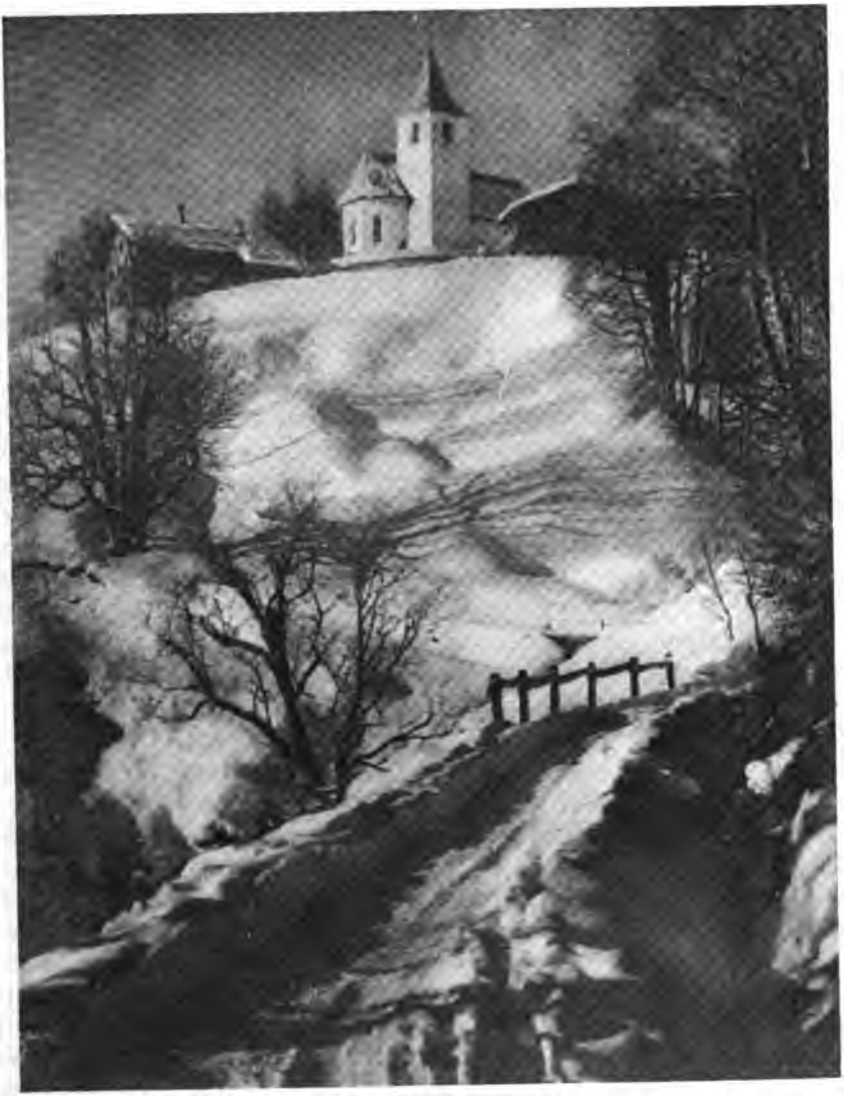
"A Washington Square Vista" was taken shortly after the last named, and shows the Arch from the same side, only much nearer, the viewpoint being from the corner of Fifth Avenue at what is known as Washington Square North. The bold sweeping line of the curved Roman archway holds the composition firmly together, while the deep shadow produced by the vaulted ceiling of the opening gives the tonal accent which strengthens the impression of luminosity and perspective in the parts beyond, which include the large circular fountain in the center of the square and the campanile of the Judson Memorial standing on the southwest corner.

"A Glimpse of Fifth Avenue" shows the commencement of the street through the Arch, being made from a viewpoint near the fountain shown in the previous study. While not taken at the same time as those already described, this was secured under similar conditions as to season and lighting.

Our two remaining illustrations, like the last, were made from standpoints in Washington Square, "Washington Arch — An Impression" being made from a position on the north-east side of the Square looking obliquely through the Arch toward the row of old brick mansions facing Washington Square North, in what at one time constituted the most aristocratic section of the city. While the descendants of the builders have mostly fled before the wave of business which for years has been steadily creeping uptown, the houses have taken on a mellow quality not to be found in the newer residential sections further uptown. The pictorial effect in this composition depends quite as much upon the juxtaposition and spacing of the few large spots of light, middle, and dark tone as upon the curving and vertical lines which are a noticeable feature. Like the others, this was made in a morning lighting, the sun's rays being obscured by clouds.

The final study in the series, "In Washington Square," shows the south face of the Arch (the side next the Square) in strong perspective from a viewpoint opposite the west side. Some of the fine trees adorning the borders of the Square and quiet side streets adjacent to it were here introduced for the decorative effect produced by the foliage, the "spotting" of which against the sky helped to soften the severity of the rectangular lines of the marble pile, besides diversifying the tonal scheme. This one was taken quite late in the afternoon while the subject was seen through a hazy grey atmosphere.

Since this series was made several notable groups of sculpture have been placed upon the pediments, and these would afford scope for some interesting impressions at closer range than any of those shown, as striking and attractive effects of light and shadow of varied character are to be found by observing sculpture, either in the round or high relief, under different angles of illumination and intensity of lighting.



FURNA

D. MISCHOL

American Photography Annual Competition

TRIMMING SNAPSHOTS

ARTHUR HAMMOND

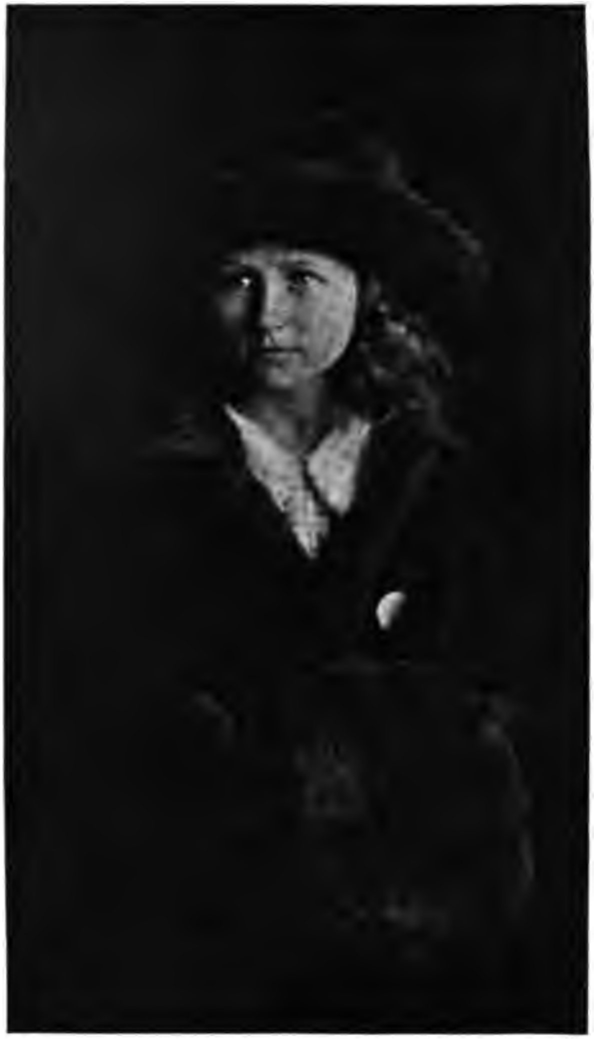
The NEARLY universal practice of printing pictures with a white border has almost made the trimming of snapshots an obsolete practice except as far as the removal of excess paper and the evening up of the white margins is concerned. This is much to be regretted, because a large number of snapshots so printed would have been improved pictorially if a little thought had been given to appropriate trimming. It is almost impossible always to make every picture fit a definite size of print, such as 3¼ x 4¼, 2½ x 4¼ or 3¼ x 5½, even though there is the option of arranging the subject matter to fill the space either vertically or horizontally. A careful, deliberate and experienced worker, using a view camera, and having at his disposal a battery of lenses of varying focal lengths, would find it very hard always to make every picture exactly fill the entire space and it would be absurd to expect snapshots, often made hastily and without any opportunity for deliberate consideration of the viewpoint, to be perfect in this respect. Many people are quite satisfied if they get their subject on the film at all. Whether or not it fills the space properly, without being either too large or too small for the space it occupies, is a question that is not considered as often as it might be. It is seldom that six pictures on the same roll really can be printed appropriately with the same standard printing mask, and yet this is done constantly by professional finishers of amateur pictures who turn out hundreds of prints every day of a few standard and uniform sizes.

To prepare a suitable and appropriate printing mask for every negative would be a tedious and time-consuming operation and it would be impossible for the regular "finisher" to do this except at proportionate rates of payment, for, in order to handle efficiently the large volume of work that is usual in such establishments, there must be rigid standardization and a picture made with a 2A Brownie or a 3A Kodak is printed with a 2½ x 4¼ or a 3¼ x 5½ mask respectively, no matter whether the subject calls for a print of this size or not.

There are several reasons why trimming might be necessary. In a picture showing a level horizon line, such as on the ocean or a large lake, it is quite rare to find this line truly horizontal. Nearly always the camera is tipped just a little to one side or the other and the result is that the water appears to be running up-hill in a manner that is quite contrary to the laws of nature. This mistake can very readily be remedied by trimming the top of the picture so that it is parallel to the horizon line and then trimming up the other three sides accordingly.

Sometimes, when photographing buildings, if the camera is not quite level, the buildings will appear to be tipped towards one side or the other or, if the camera has been tilted upwards or downwards, there will be a convergence of the parallel lines. If the lines of the building are not parallel to the sides of the picture but are parallel to each other, the defect can be remedied very easily by proper trimming, in just the same way as a sloping horizon line can be straightened, but if there is convergence of the lines, showing that the camera was tilted upwards or downwards, the remedy is not so simple.

Often the reason for trimming is to improve the composition of the picture. Sometimes the masses, the lines or the general arrangement of the subject, can be improved by thoughtful trimming. The placing of a figure in the picture space sometimes can be altered very much for the better by trimming. Sometimes the picture may be too nearly



LEONTA H. H. E. HORRIGAN

First Prize, December Junior Competition

square in shape and needs to be made more definitely horizontal or vertical by a little trimming from the top or bottom or from one or both sides.

We must remember always that the boundary lines of the print play an important part in the general pattern or design, and influence very much the composition of the masses, and in determining the pattern or design we have to take into consideration not only the shapes of the masses in the subject itself but also the shapes of the portions remaining. If the subject of the picture is, for instance, a clump of trees, we have to consider not only the shapes of the tree masses but also the shapes of the patches of sky showing through or around the tree masses. These latter are what can be modified very often by thoughtful trimming.

The placing of the chief object of interest in the picture space is governed very much by the size and shape of the print and any fault along these lines usually can be corrected by trimming. As a general rule this object of prime importance, which may be a figure, an animal, a tree or a building or what not, in a landscape, or the head in a portrait study, should, usually, be located as nearly as possible one-third of the picture space from the top or bottom and one side of the picture. If this important object is poorly placed, its position in the picture space can very easily by corrected by trimming.

As a general rule it is a mistake to have the main object of interest located exactly in the center. The reason for this is that an exactly symmetrical arrangement nearly always results in the composition being poorly balanced, and good pictorial balance is an important qualification. The mechanical balance of the steelyard may be utilized to suggest a satisfactory pictorial balance. We know that a heavy weight near the fulcrum can be balanced by a much lighter weight at a distance from the fulcrum and in building up a well balanced pictorial composition, we try to have a secondary object of interest, thus balancing the main object of interest. If the main object of interest is exactly in the center of the picture, there can be no secondary object of interest to suggest the mechanical balance of the steelyard, because the center of the picture is where we imagine the fulcrum of the steelyard to be. A lack of pictorial balance will be obvious at once to those whose eye is trained to see and appreciate such things, and lack of balance is a fault that may often be remedied very easily by trimming the print in such a way that the main object of interest is located in about the right place.

Sometimes, in order to get our picture from the point of view that we want, we are compelled to include too much of the surrounding scenery and when this is the case the picture, usually, can be improved by trimming. Sometimes, too, we find that we have included just a little bit of a house, a rock or a boat, or some other extraneous and unexplained fragment that does not mean anything or add in any degree to the interest or beauty of the picture. Trimming is the obvious remedy for this.

If we want a white border on the prints and, at the same time, find it necessary to alter the size and shape of the printing mask to suit each individual negative, it will be necessary to use some sort of adjustable masking device such as the Kodak "Auto-Mask" printing frame and we shall have to get the knack of judging the composition and balance of masses by the negative instead of from the print, unless we make a trial print to go by, which, in some cases, will be necessary. It will not be found difficult to judge as to the purely pictorial aspect from the negative alone, for the design or "pattern" and the balance of masses should be just as easy to appreciate in a negative as in a print. In this we are not concerned at all with the subject of the picture. A little experience will enable one to "trim" a negative with the Auto-Mask as easily as one trims a print with a print cutter.

If there should be any difficulty in deciding just how a print should be trimmed, it will be found helpful to make use of the old and reliable device of using two L-shaped pieces of card to mask off the parts to be cut away, moving them around until the desired effect has been secured. The appreciation of balance and harmony of design is a quality that can be cultivated by practice and experience. A study of good pictures will help very materially in acquiring this ability. Sometimes only a very little trimming is needed to improve a picture quite considerably and, of course, when the print is a small one to begin with, the cutting must be done very carefully. It will well repay an amateur who is at all artistically inclined to pay some attention to this important matter, for the frequent exercise of critical judgment in determining the best proportions in his prints will strengthen his artistic perceptions very much.

PORTRAIT LOUIS ASTRELLA
Boston Y. M. C. U. Camera Club

(2) The possible necessity for the after use of the persulphate bath, a substance which is admittedly subject to whims and vagaries, but which, if all goes well, is one of the most valuable aids in the photographer's chemical cupboard.

A more drastic method of dealing with an underexposed negative is the following: After the plate has been in the developer a sufficient time to indicate clearly that it is underexposed, the development should be continued, preferably in a dilute developer without bromide, until as much detail as possible is visible in the shadows, and not too much density in the highlights. With the plate still under the developer, an ordinary match is struck and the light held over the plate in the dish for two or three seconds. The match is extinguished, and development allowed to proceed until the plate is apparently black right through. On fixation it will be found that a moderately dense positive has been secured, and from this a very much better negative can then be made by contact than would have been possible by direct development in the first place. — *Amateur Photographer.*

FIFTY YEARS OF DRY PLATES

CARROL B. NEBLETTE

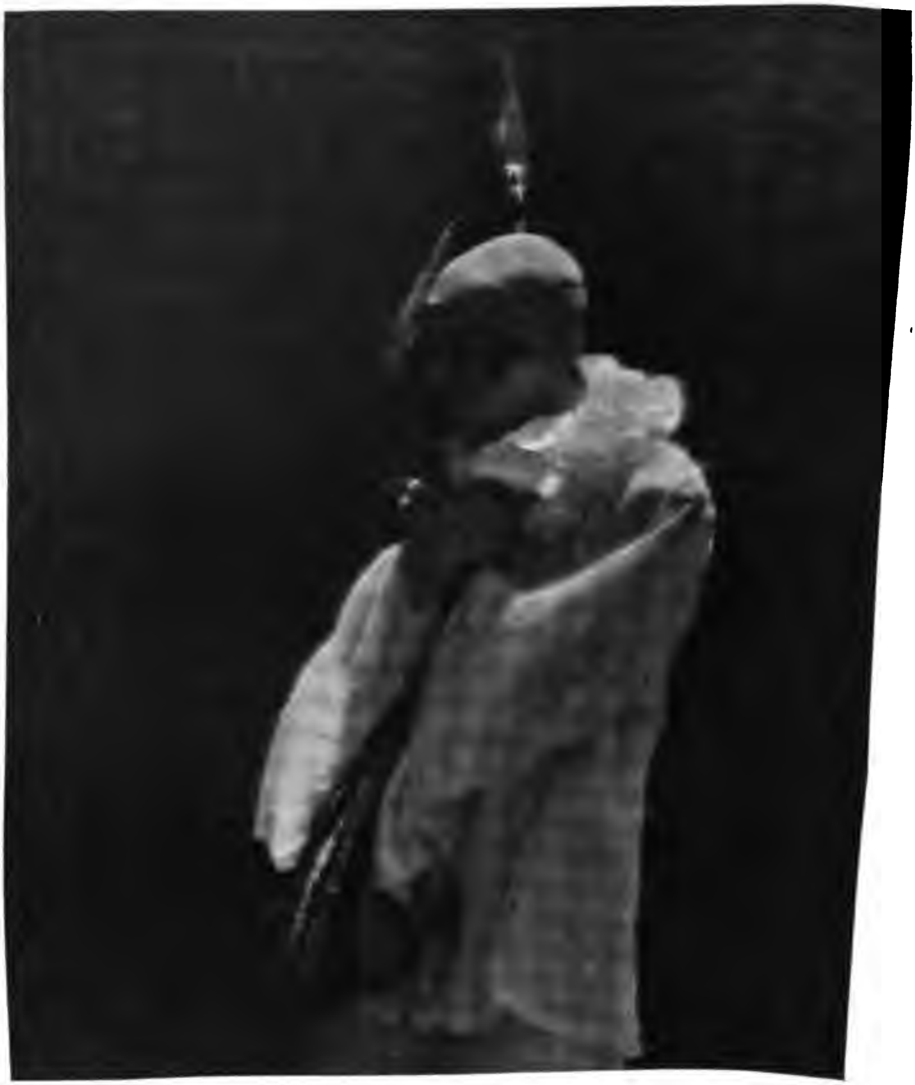
Director, Division of Photography, Pennsylvania State College

IT IS now fifty years since Dr. R. L. Maddox published in the *British Journal of Photography* for September 8, 1871, the method for the preparation of gelatino-bromide emulsion. Gelatine had been experimented with by several workers, notably Harrison, Poitevin, and Smith, at an earlier date but technical imperfections made the process useless. Thomas Sutton, at that time one of the most active writers on photographic subjects, published in the *British Journal of Photography* a theory which was afterward realized by Maddox and others. He says: "The objection to collodion is that, when it is allowed to get dry upon the plate without having been wetted, it dries to an almost impenetrable film, which the developer has scarcely any power of entering, so that the image is thin and superficial. This would not occur with gelatine film. There do not seem to be any difficulties in spreading it, for it is applied hot, and quickly set. A great advantage would be that the film could be composed of a capital organifier through its entire substance, instead of a mere layer of the organifier upon the surface."

Dr. Maddox was led to try gelatine because of the usual difficulties met with collodion. The first experiments were made with vegetable matters such as lichen, linseed, rice, tapioca and Japanese vegetable wax. Next albumen was tried and he says in a letter that he wasted many eggs experimenting. Next isinglass at twenty shillings per pound was experimented with, and he says that the first experiment led him to hope that he was on the right track. A packet of Nelson's gelatine which was in the house was next tried, and this gave a better medium than anything that had been tested. The plates were first printed under a negative in the printing frame and then they were tried in the camera. Trial upon some laurels showed a serious lack of gradation. Having heard that bromide gave better gradation than iodide, he began to increase the bromide while reducing the iodide. This was of some advantage, and he turned his attention to the use of aqua regia which had been spoken of by Carey Lea. Later gum, sugar, and glycerine were tried.

Dr. Maddox was now convinced that only further experiment was needed to make the process useful, as some of the results had been very promising, although the plates as yet were slower than wet collodion. About this time he received a letter from Mr. J. Traill Taylor, then editor of the *British Journal*, asking his assistance without delay by an article for the next issue, as he was seriously ill. In order to accommodate his friend, Dr. Maddox hurriedly wrote the fragmentary article that appeared on September 8th. His health was now in a precarious condition and other matters were demanding attention, so that he was forced to leave the process in the same condition as published. Other hands came to the rescue and two years later Burgess advertised emulsion through the *B. J.*

Dr. Maddox was born in 1816 and lived for many years at Constantinople, where he practised medicine. He was married there in 1849. Mrs. Maddox died in 1871 leaving a son and a daughter. In 1875 Dr. Maddox married again. Always a man of note in his profession, he had many distinguished patrons including the Duke of Montrose, Sir Watkins Williams Wynn, and Lady Katherine Bannerman. He retired in 1886 and lived a retired life at Greenbank, Southampton, never losing his interest in science to the very



IERROT FORLORN
RTHUR F. KALES
uffalo Salon, 1920

end, and writting for the *B. J.* and other journals of this country and England. He died on May 11, 1902.

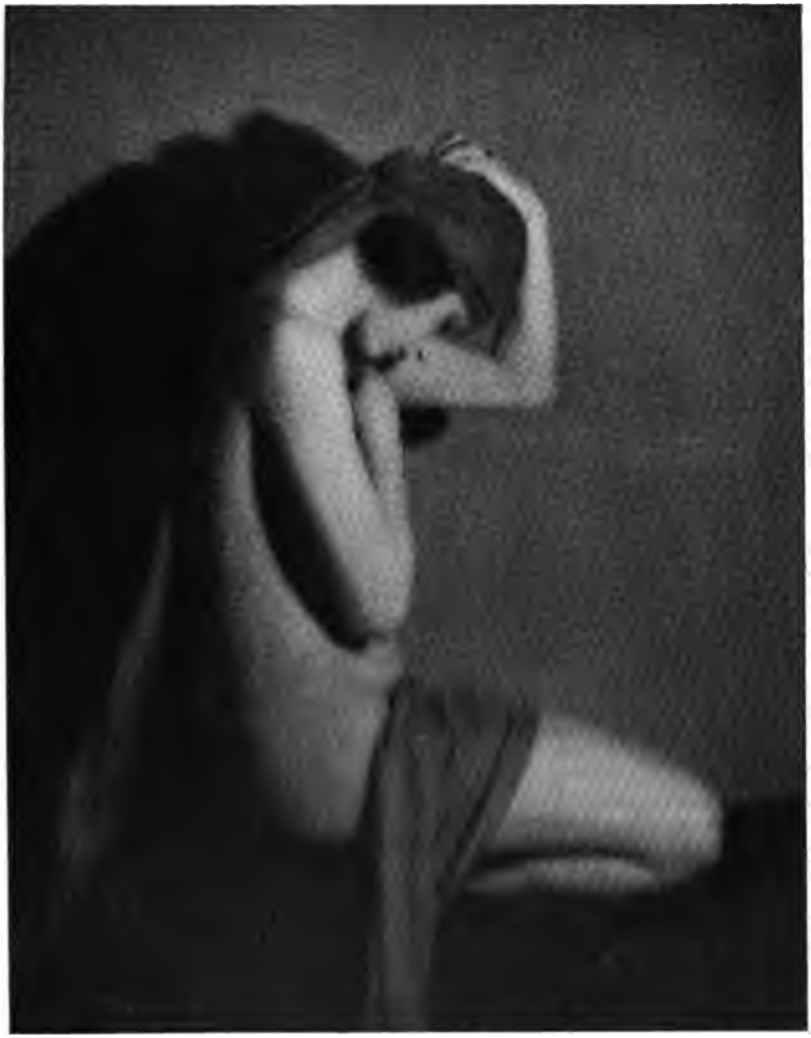
Dr. Maddox never received fitting recognition for the great work which he accomplished. In the Epitome of Progress of the *British Journal Almanac* for the year 1871 the process is not mentioned, which is indeed strange, as Mr. J. Traill Taylor, who was then editor, was noted for his far-sighted judgment. Later Maddox received a diploma from the Inventions Exhibition and in 1901, 30 years after the discovery, he received the progress medal of the Royal Photographic Society, which was awarded annually for inventions or research in the photographic process and is the highest gift within the power of the Society.

After the publication of the process by Maddox in 1871 the next indication of interest in gelatine is found in the *B. J.* for July 18, 1873, when Burgess advertised gelatino-bromide emulsion. He did not publish the details of his process and, owing to the decomposition of the gelatine and the difficulties of coating, the process did not prove a commercial success. At a later date Burgess coated the emulsion on glass instead of selling the emulsion and leaving the photographers do their own coating, but the times were not ripe for the advance and there were imperfections in the process, so the adventure had to be abandoned.

On October 3, 1873, an anonymous writer, Ostendo, published in the *B. J.* a formula containing alcohol and in the same journal, on November 4th, King showed the advantage of washing to remove the extraneous substances from the emulsion. The difficulty with all of these processes was the instability of the emulsion. To overcome this Kennett introduced a process which was patented and introduced in March 1874. The plates of Kennett were remarkable for their perfection, considering the age of the idea, and were more rapid than the old wet collodion which was then in universal use. The rapidity was, however, the cause of the commercial failure of the firm, as photographers accustomed to wet collodion would not believe the speed to be greater than the wet plate and persisted in overexposing. Then the lights used for developing were not safe and the plates were accused of fog. Many careful workers, however, used the Kennett emulsion with complete success.

The following years saw many attempts to increase the speed of the emulsion, some of which were successful. Bennett, at a meeting of the South London Photographic Society, showed examples of negatives made on plates, the emulsion of which had been stewed for from two to seven days. He was begged to make the process public and did so in the *B. J.* The discovery of Bennett was a great impetus to the gelatino-bromide emulsion and soon after gelatine replaced collodion completely everywhere, except with the process workers, but the years 1878-81 must be considered years of transition.

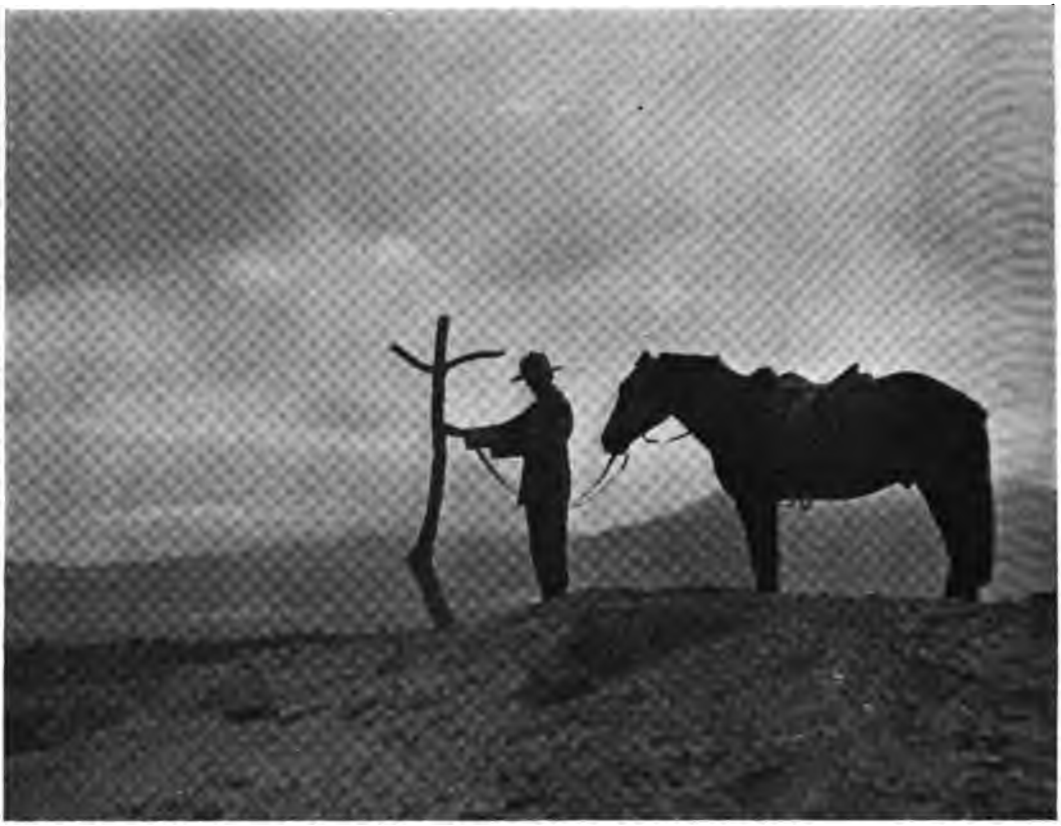
In 1878, a few months later than Bennett, Col. Stuart Wortley described the preparation of an emulsion and increasing its speed by boiling. This saved time as compared with Bennett's method, but was not satisfactory, as there was a danger of affecting the gelatine. Boulton, at one time editor of the *B. J.*, advised the cooking of a part of the emulsion for a short time and then adding the cooked portion to the remainder, and this is the general plan followed today. Later on, in 1879, Dr. Monckhoven, in a lecture before the Belgian Photographic Society, called attention to the use of ammonia to assist in the ripening process and increase the speed. Monckhoven's method was used by several prominent manufacturers and is probably used today for the production of our extra fast emulsions. There is a general belief that boiled emulsion will retain the image longer than an ammonia-ripened plate. That, however, is a doubtful question at the present time, although in the early days of the dry plate it was probably true.



THE BENEDICTION OF NIGHT F. BAUER
Pittsburgh Salon, 1920

As the discovery of orthochromatic dyes properly comes under another heading, we will not do more than mention here that it is due to Dr. H. W. Vogel, who prepared an orthochromatic collodion as early as 1873.

I hope that this short excursion into the history of the dry plate will prove of value to those who are interested in the evolution of the materials which they use. Photography has been blessed by many far-reaching discoveries, but the gelatino-bromide process of Dr. Maddox deserves to rank as one of the greatest. In the fifty years since the publication of the small unassuming note in the *B. J.*, the practice and scope of photography has spread immensely, and of all the work of sympathetic and enthusiastic workers none has been quite as valuable and as far reaching in its effects as the gelatino-bromide emulsion of Dr. Richard Leach Maddox.



THE SUMMIT SIMON JOCHAMOWITZ

THE SUMMIT

Any artist, whether he is a photographer or a painter, who wants to make successful pictures must bear in mind the importance of the part played by the imagination in looking at pictures. The impressions derived from looking at pictures are very largely a matter of suggestion and on the artist's ability to suggest depends the success of his picture. That will explain to a certain extent how it is that pictures that are broadly handled and that are stigmatized by some as being fuzzy and meaningless are appreciated and understood by those who have sufficient imagination to grasp something of the artist's impressions. It is not always necessary to depict every detail clearly, for often a mere outline or a silhouette will tell all that is necessary to tell. It is because it leaves some scope for the exercise of the imagination that Mr. Jochamowitz' picture, "The Summit," is unusually successful. The almost detailless silhouette of the man and his horse suggests very strongly the idea of the setting sun away off in the distance and makes the picture far more impressive than it otherwise would be. It gives them also more prominence and importance than they might otherwise have had on account of the very strongly marked and very interesting sky. This is a picture that its maker may well be proud of; it tells a story and tells it well. Made in Pisco, Peru, South America, with a 3¼ x 4¼ Graflex camera, Bausch and Lomb Tessar lens of 5½ inches' focal length, stop used *f*:16, dull light at 11 A. M. in June. Seed 30 Gilt Edge plate, developed with pyro, enlargement on Eastman Bromide C.

SOLVING AN OLD WINTER PROBLEM

Nearly every winter a number of professionals complain of lack of body in their negatives. They blame the plates or the developer — but the whole trouble, in nine cases out of ten, is that they have not got into the regular swing of their winter work.

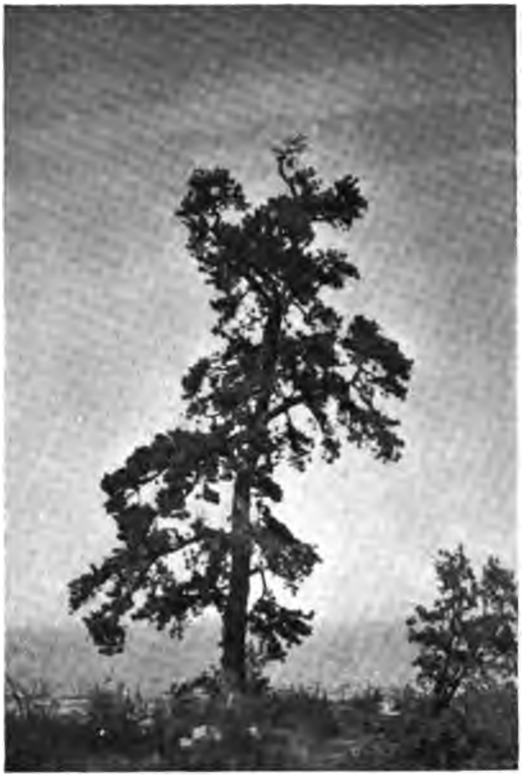
As the days draw in, there is a general yellowing of the light. If the operator goes on giving summer exposures, after the light has lost so much of its actinic power, his negatives are certain to be underexposed. The obvious remedy is to give longer exposures.

Even when the exposures are correct, there is too often underdevelopment. If the professional does nothing to raise the temperature of his developing solutions in the winter, what can he expect but underdeveloped negatives? Every developing solution loses its power rapidly as its temperature falls, and a very cold developer can scarcely be called a developer at all. The temperature should never be below 65° — and the photographer who warms his solution up to this point and ***keeps it there*** will have no reason to complain of weak negatives.

Good, strong, plucky negatives, with plenty of gradation and body in them, can be secured in winter as well as in summer by increased exposures and by raising the temperature of the developing solution. — *Professional Photographer.*

GNARLYPINE

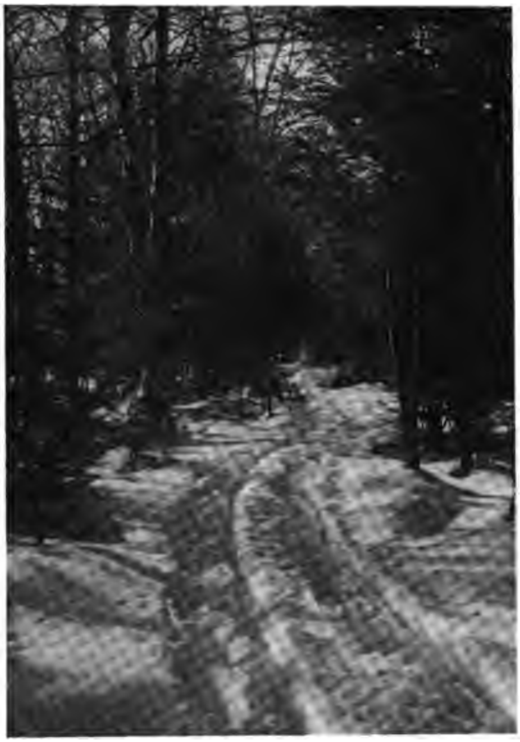
This is a strikingly picturesque subject, well worth using as pictorial material, but we are inclined to think that the maker of the picture has failed to utilize this material to the fullest advantage. The placing of the principal objects in the picture space has not been carefully considered and we think this might have been improved by a slight change in the point of view from which the exposure was made. The smaller tree on the right — the secondary balancing object of interest — is crowded too close to the edge of the print and the main object of interest, the big "Gnarlypine," is a little too nearly in the center of the space to give good pictorial balance. These two objects might have been arranged in the space so that they would exemplify the mechanical balance of the steelyard and thus give good pictorial balance. A slightly more distant point of view seems to be called for and, possibly, a little trimming from the top of the print to accentuate the height of "Gnarlypine." The double tinted border on this print is very effective and demonstrates very well the good taste and the skill of the maker. The ubject was found in Northern New York and the picture was made with a 5 x 7 Premo camera fitted with a Turner-Reich lens used at *f*:8, the exposure was 1-125th second, hazy light at 9 A. M. in July, Eastman Portrait film developed with Amidol, print on Azo AA.



GNARLYPINE M. A. CHAPMAN

DEVELOPMENT OF UNDEREXPOSED PLATES

When a plate is known to be much underexposed it is always a good plan to use a very much diluted developing solution that contains no restrainer (potassium bromide) and rather more than the usual amount of accelerator (sodium carbonate). The dilution will tend to prevent the highlights from becoming too dense before the shadow detail is sufficiently developed. If a plate is found to be underexposed when development is commenced in the ordinary way — the fact that it is underexposed will be shown by the image taking an unusually long time to appear — it is a good plan to transfer the plate to a dish of plain water, cover it up and let it remain there for ten or fifteen minutes. In this way all possible shadow



THE BUSH ROAD F. H. CHANT

detail will be obtained and the highlights will not become unduly dense. If the image, after the soaking in plain water, is not strong enough, the plate should be put back for a minute or two into the ordinary developing solution and then fixed and washed. This method of development is frequently used by those photographers who take pictures at night by artificial light in which there are very extreme contrasts between the lights and shadows.

THE BUSH ROAD

There are certain subjects that are more suitable for reproduction with a camera than others, and the gradations of tone on snow in sunlight most assuredly must be counted as one of them. The peculiar virtue of photography that distinguishes it from all other means of graphic representation is the ability of the lens to draw fine shading and the ability of the sensitive plate to register delicate gradations of tone. No pencil drawing or etching can rival photography in this respect. Correct exposure followed by careful development and printing will give good tones. "The Bush Road" is an example of unusually fine tone-rendering, and in addition to this it is a well composed picture; the point of view was well chosen and brings out to advantage the S-shaped curve of the wheel tracks in the roadway. The dark tones in the trees and foliage have gradation and detail as well as the light tones in the snow, which shows that the exposure was well timed and that development of the negative was not carried too far. This is one of the most successful snow pictures we have seen for a long time. Made in Massachusetts with an Ica camera, 3¼x4¼, Hekla Anastigmat lens of 4¾ inches' focal length; the stop used was *f*:18 and the exposure through a K3 filter was one second. The Cramer Inst. Iso Plate was developed in a tank with pyro and the print is an enlargement on P. M. C. Bromide No. 6.

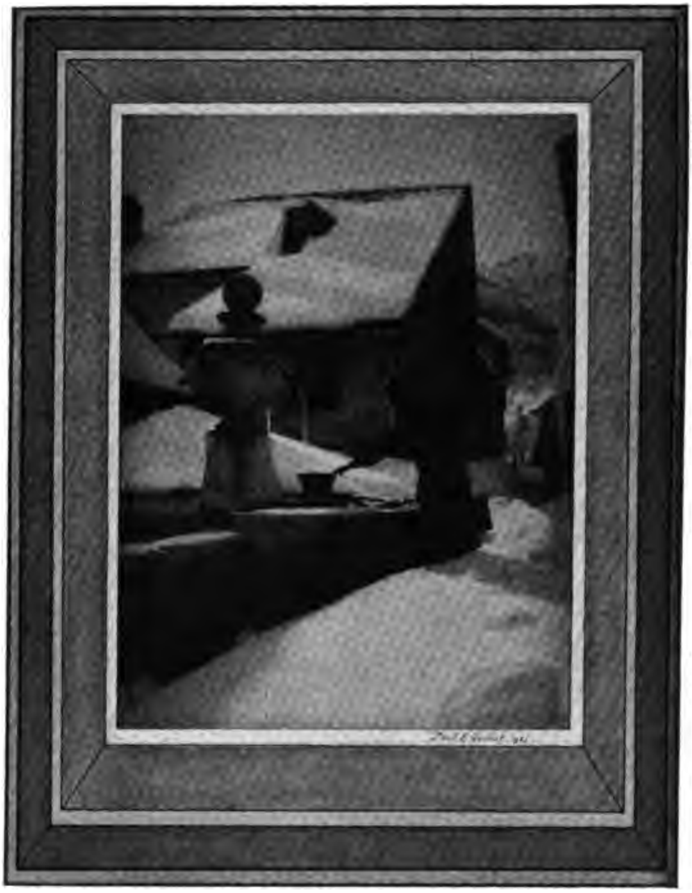
SLOW DEVELOPMENT FOR DIAPOSITIVES

Fotografia Practica gives the following developer as being excellent for developing diapositives for stereoscopes or for projection.

	A	
Water	300 cc	3½ oz.
Hydrochinon	3 grams	50 grains
Sodium bisulphite	4 grams	65 grains
Potassium bromide	1½ grams	23 grains
	B	
Water	300 cc	3½ oz.
Caustic soda	4 grams	77 grains
	C	
Water	300 cc	3½ oz.
Ammonium bromide	15 grams	½ oz.
Ammonium carbonate	15 grams	½ oz.

For normal exposure take 15 cc of A (½ oz.), 15 cc of B. (½ oz.), and 8 cc of C (¼ oz) in a half litre (17 oz.) of water. The picture will appear in gray-black tones in about ten minutes. For exposure one and one-half times the normal, take the same proportions plus 20 cc (2-3 oz.) of C This will give various tones with 15 minutes' development. By exposing three or four times the normal, using the same developer, in from 30 to 40 minutes purple or rose tones may be obtained.

The quantity of water may be doubled or trebled to prolong the development, without changing the quantity of chemicals. The more diluted the developer, the warmer will be the tone of the print.



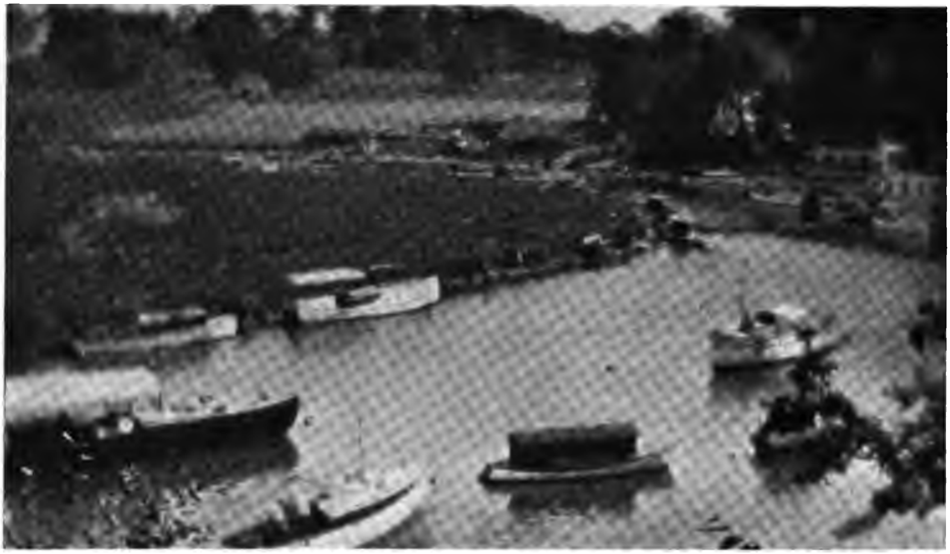
SUN AND SNOW PAUL E. GUILLOT

ROLLABLE BACKGROUNDS

A background (writes L. B., in *Photography and Focus*) which has been painted with ordinary oil does not roll up without cracking, but it may be of service to indicate how this can be prevented. A quarter of a pound of soft soap should be stirred up in a pint of boiling water until it has all been dissolved, and this solution, a little at a time, should be added to its own bulk of the oil paint, thoroughly stirring it in until the mixture is complete.

SUN AND SNOW

For those who delight in technical difficulties there is nothing more interesting than photographing snow. Snow in bright sunlight, snow in shadow, snow photographed through a color filter and without a color filter; all these conditions raise many points for discussion and on all of them there are varying opinions. Anyone who has studied the matter of tone rendering by photography will have discovered that a compromise is necessary when the subject happens to be one in which there is a long scale of tones, such as, for example, a scene showing snow in sunlight at one end of the scale and very deep shadows or figures with dark dresses at the other. In a case like this we often have to sacrifice some of the tones in order to compress the tones of nature into the shorter range of the photographic printing paper, but in order to make the picture look convincing we should try and get the darkest tone and the lightest tone approximately correct and leave out some of the middle tones. In M. Guillot's interesting picture, "Sun and Snow," the highlights on the snow are wonderfully well rendered and the sky value seems to be just about right, but there is a loss of shadow detail in the deepest shadows



A QUIET NOOK ARTHUR YOSHIDA

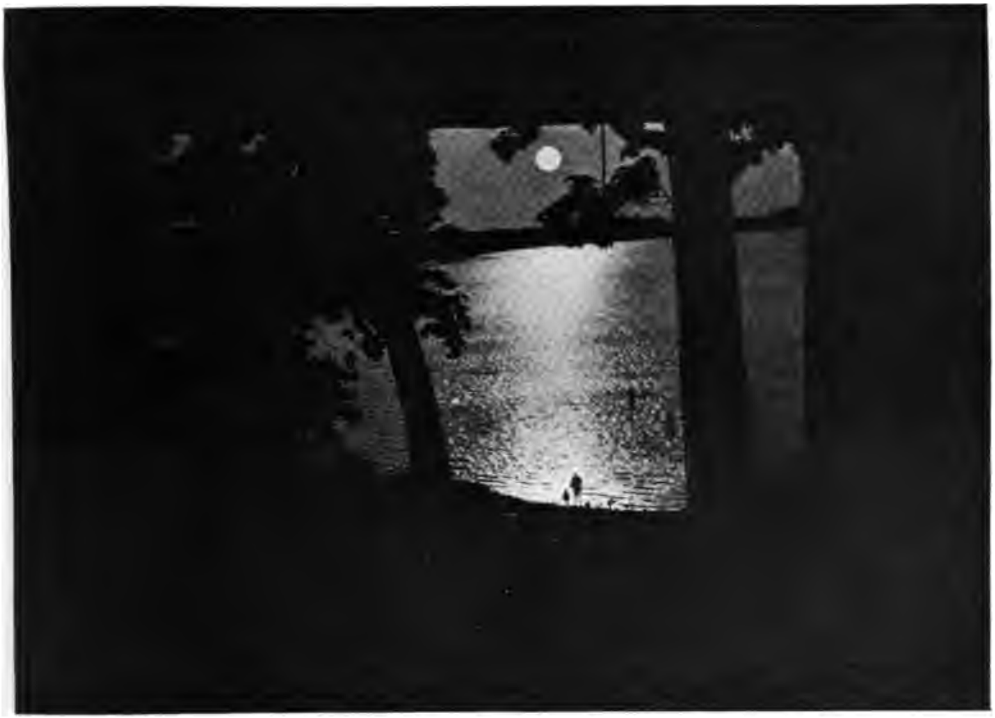
which makes them appear rather too heavy. This is due either to underexposure or to overdevelopment of the negative. This picture, all the way from Tunis, North Africa, is specially interesting to us in another continent. The mount, very cleverly designed and skilfully drawn by hand, would have been better if the narrow white edge next to the picture had been replaced by one darker in tone. This white border has the effect of making the snow tones appear darker than they really are by contrast with the white. Negative made on Premo film pack, Ic Tessar, *f*:4.5 lens, three-times filter, exposure 1-10th second in January, enlargement on Velox Carbon Regular.

A QUIET NOOK

There is a very nice lens quality in this little picture and the receding planes are very well differentiated. The line arrangement is very interesting with its suggestion of the S-shaped curve and the grey tinted border around the print with a black ink line close to the print make a strikingly effective and original mount. The only fault we have to find with this print is that there are too many boats and other objects scattered all over it, especially in the foreground. This tends to make the picture rather "spotty" and far from restful. If this could be photographed at a time when there are fewer boats, or, possibly, in the winter time, when there are none, we think there is good material here for a very interesting picture. Made with a Graflex camera, 3¼ x 5½, fitted with a Verito lens of 7¼ inches' focal length, used at *f*:4, good light at 2.45 P. M. in August, exposure 1-100 second, Eastman film pack, developed with film tank developing powders, print on Azo Soft.

A SIMPLE LAMP FOR BROMIDE WORK

For bromide work it is quite safe to have plenty of yellow light in the dark-room, and this is far superior to the ruby light used for plates and films, as it is easier to see how far the print or enlargement has progressed in developing. Those workers who do not possess a dark-room lamp fitted with red and yellow screens may make a lamp for their bromide work very simply as follows: A biscuit tin serves well for the body of the lamp, and this should have two or three holes punched in the bottom to admit air. The lid is then taken, and all the centre removed, leaving about an inch all round the edge. To this a piece of yellow fabric is fixed with "seccotine," or failing this two or three sheets of deep canary-colored paper sold for decorative purposes. The lamp is then complete. To use it, the lamp is laid upon its side, a candle lighted and put in, and the lid of the box put on. The worker need have no fear of the little white light that



MOONLIGHT — O. G. DANEWIT

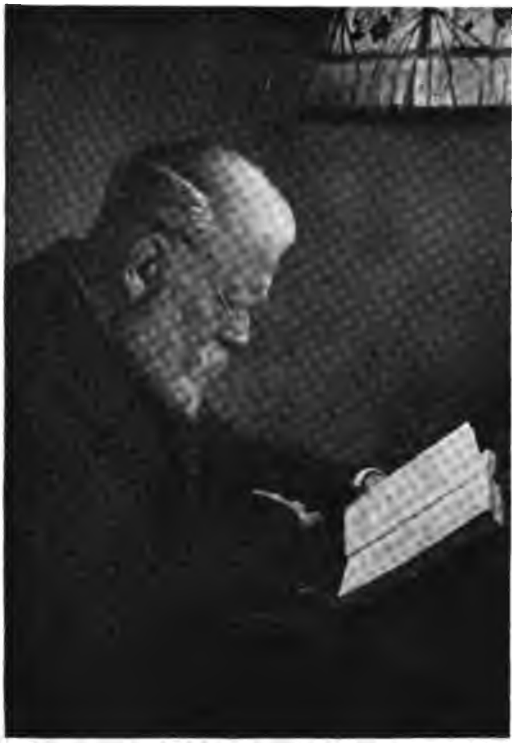
escapes from the rear of the lamp hurting his bromide paper, provided it does not come directly in contact with it. The above, though simple, will be found exceedingly useful in practical work for the purpose named. —*Amateur Photographer.*

MOONLIGHT

There is a subtle quality in real moonlight that it is almost impossible to suggest in a photograph. Certainly a hard and contrasty, black and white print never can convey even the remotest idea of moonlight, for there is very little contrast in moonlight, everything is soft and mysterious. Possibly a bluish toned print with cold, blue grey shadows; flat, empty shadows, devoid of detail, but, at the same time, not black and hard, might give a good impression of moonlight, but that would be a hard thing to get with a camera. Then, again, the moon never is as large as it is almost always represented when it is "added" mechanically to a sunlight picture. In a real photograph of the moon it is always rather surprising to see how relatively small the luminous orb appears in comparison with other objects. Mr. Danewit's picture which he frankly tells us is printed from a sun picture, is a very interesting silhouette study, but it is not entirely convincing as a representation of moonlight and the size of the moon in the picture is really alarming. Made with a Vest Pocket Kodak Special, anastigmat lens stopped down to *f*:32, exposure ½ second at 7 P. M. in July, Eastman roll film developed with metol-quinol, enlargement on Azo F No. 2.

THE METRONOME IN THE DARK-ROOM

The metronome, used by students of music for beating any required measure at will, is an instrument which can be of such service to photographers that a note on its use may be of interest. In practical use the writer has found it to be superior even to specially constructed dark-room clocks, principally on account of its advantage of registering each second by a loud "tick," thus leaving the hands *and eyes* of the operator perfectly free for the work in progress, while the duration of exposure, development, etc., can be accurately counted. It may here be observed that for all photographic work the metro-



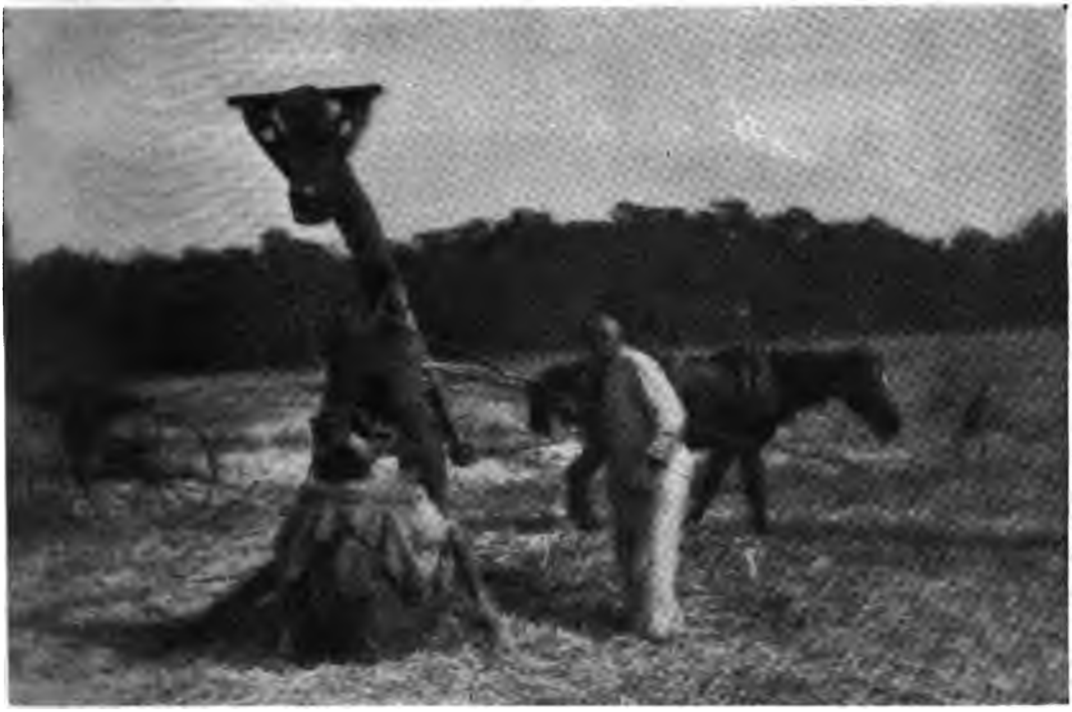
STUDY CHAS. CRAIK

nome indicator should be set at the figure 60, when seconds will be ticked with the necessary precision. To begin with, amateurs who go in for enlarging to any extent — and their name is legion — will admit that there are few negatives not calling for some form of shading during the time of exposure of the enlargement either to prevent a shadow from becoming too opaque or for some other modification. It is obviously impossible to keep the eye simultaneously on the clock or watch and on the shading operation, while it is not everyone who can, unaided, count seconds with accuracy. It is here that one of the chief uses of the metronome comes in, since it can be set to tick off seconds with certainty, thus leaving the hands free for the manipulation of the lens cap and the work of shading the print, the eyes being also freed from the clock to follow the progress of this operation. Moreover, the time of shading and the total time of exposure, once found, may be recorded on the margin of the negative for future reference. Again, should it be of importance to make a number of prints or enlargements from the same negative, and to secure results as uniform as possible, if the metronome is used during the time of exposure and development, not only is exactitude in exposure assured, but each print can be developed for the same length of time, with the effect of securing results of absolute uniformity, providing that the developer is not overworked. This will be found invaluable in postcard printing and the making of portrait enlargements from small negatives. For the development of autochrome or other color plates the advantages of the instrument are obvious, since, if development is done blindly for the full two and half minutes, the plate need not be exposed to the dark-room light for one moment of the time until the acid permanganate (in the case of autochromes) has been poured on and all is safe; while if the system of tentative development now recommended by Messrs. Lumiere is adopted, taking the time of first appearance of the image is greatly facilitated, as also are the subsequent operations. — *Amateur Photographer*.

STUDY

It is difficult to make a picture by means of a combination of daylight and artificial light without there being, somewhere in the picture, some evidence of the double lighting, but in his clever portrait study illustrated above, Mr. Craik has very cleverly overcome this difficulty. In making this picture the main source of light was the artificial light consisting of two 60-watt bulbs under the lampshade, part of which is shown in the top right hand corner. There was a window in front of and towards the right of the sitter with the shade drawn down to within about one foot of the bottom, but as the light from this window was very faint, as would be expected at 5 P. M. in January — it did not do more than provide a slight general lightening of the shadows.

This is a very pleasing and successful portrait study; every detail has received careful consideration. The hands are very well arranged so that they do not form any distracting areas of competing light, yet they appear to be entirely natural. From the point of view of composition, it would add to the effectiveness and simplicity of the picture to trim off about an inch from the top, removing all of the lampshade. This was our first thought before reading the data. We, see, however, that the lampshade is an important factor in telling the story. Made



GRINDING SUGAR-CANE FRANKLIN GRAY McINTOSH

with a 5 x 7 view camera fitted with a Wollensak R. R. lens of 8½ inches' focal length, used at *f*:8, light as described above, exposure 20 seconds, Royal Polychrome plate, developed with metol-hydrochinon, enlargement on Eastman P. M. C. Bromide paper.

ELIMINATING HYPO

Decomposition in sensitized goods is often attributed to insufficient washing, when, as a matter of fact, the real cause is more often insufficient fixing. Proof of this statement is seen in the result of a recent experiment in the Kodak laboratory on the elimination of hypo from the film of negatives.

1. The elimination of hypo from a negative depends very largely upon the agitation given to the water, very rapid and complete agitation causing twice as much elimination as is secured when the material is merely left in the water to soak.

2. The rate of washing out of hypo is practically independent of the temperature of the water, measurements made at 65° 70° and 80° F., all showing the same rate of loss of hypo. This result, although it appears strange and is contrary to usual belief confirms some experiments made many years ago.

3. The elimination of hypo is very rapid in all circumstances, the amount of hypo in the film being reduced one-half every two minutes if plates are left stationary and every one minute if agitation is ensured. Consequently with complete agitation the film may be considered to be free of hypo in ten minutes, and if the agitation is less complete, twenty minutes is sufficient. — *Photo Digest.*

GRINDING SUGAR-CANE

To us in the East this kind of picture is very interesting for it shows a typical southern custom that we might not otherwise know of. Just how the ingenious looking contraption really functions might perhaps be hard to see, but no one could help being interested in the smiling old darky and his rather tired looking horse. It would help the composition to trim an inch or so off the left hand side and a trifle longer exposure would have given a rather better graded negative. Possibly the rather heavy shadows are due to the enlargement being a trifle too dark. Such pictures as this are always well worth the trouble of making and we think that every effort should be made to enable those who live in various sections of the country to get some idea of the manners and customs of other states by means of just such pictures as this. Made in Florida with a 3A Graflex camera, Tessar Ic lens, *f*:8, exposure 1-165 second, good light at 2 P. M. in January.

THE SWAN POND

The "graded" filter is one of those photographic accessories that may be either a help or a hindrance to its user. In photography, just as in everything else, it is very necessary to know not only how but why certain things are used or certain operations performed. A little knowledge often is a dangerous thing. There are times when the use of a graded filter will give better balanced lighting and will prevent overexposure in the sky portion of the picture, but this is true only when there is a definite line of demarcation between the sky and the foreground. Strictly speaking, color correction is needed throughout the entire picture, in the foreground as well as in the sky portion, but it is often possible to produce a negative that will print more evenly if the intensity of the light in the sky is subdued a little by means of a graded filter. To use such a filter in a picture in which there is no expanse of sky, in such a picture, for instance, as "The Swan Pond," in which objects in the foreground and middle distance extend up to the top of the picture, is quite a mistake. This will be readily seen if a little thought is given to the reason why such a filter should be used. The halation in the upper portion of "The Swan Pond" is due to the underexposure, over-correction and forced development induced by the use of a graded filter. The subject is an attractive one and is worthy of more adequate technical treatment and we would strongly advise Mr. Raven to try it again under similar lighting conditions but with more suitable exposure of the negative. Made with a 4 x 5 Cycle Graphic camera, Carl Zeiss Ic Tessar lens of 6 inches' focal length used at *f*:8, bright light at 4.30 P. M. in June, exposure 1-25th second, Standard Orthonon plate, developed with Tabloid Rytol, enlargement on Artura Carbon Black.

AUTUMN EXPOSURES

In the fall the amateur is apt to be misled on exposures, as the light is dropping in actinic value as the sun gets lower in the sky. The value of light at noon in September is only half that of June and in December, it is only one quarter of June strength. Bear this in mind in autumn exposures. When foliage colors, the exposure is increased and the use of orthochromatic plates is necessary if you are to get the proper values.

"WANTED — A RECEPTIONIST"

You have seen in the daily press; and many of you have no doubt inserted, advertisements similar to the following:

"Wanted — Experienced lady receptionist for high class portrait studio. References. Apply in person. * * * Blank Studio."

Has it ever occurred to you just what you are demanding? "Yes," you will say, "an experienced receptionist." But *why* demand that intangible, elusive, impalpable quality known as "experience?" Did it never occur to you that any competent receptionist, who has some knowledge of art, of photography, of methods of selling and that innate ability of meeting the public; would hardly be in the ranks of the unemployed? Stop and consider that those "experienced" ones who are unemployed, are, in the majority of cases, misfits from another man's establishment.

In case you want someone who "knows more about the business than you do" — to take lessons from; or you want someone who has already proven a failure in that particular line of business — then demand "experience."

Would it not be better to give brains and natural talent a chance in your business? There are, remember, year by year, young people reaching the age of majority and seeking an opening in the business world — and they are frightened away from *your* establishment by that bugbear "experience required." Were *you* born "experienced" or did someone give *you* an opportunity in your chosen profession?

It would give your business new impetus for you to secure the services of a bright, attractive young lady — thousands are leaving school each year — and train her in the

THE SWAN POND FRED R. RAVEN

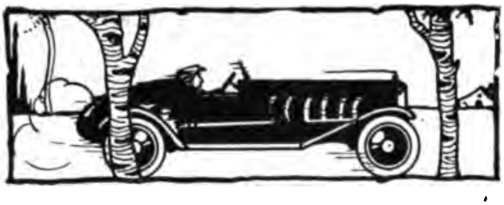
knowledge essential to the profession. Train her in the fundamental principles of art, of photography and of salesmanship, which are identical no matter what article you are handling.

If it is good business for the great department stores of the country to train young men and women in business methods, and pay them during their term of apprenticeship, is it not good business for *you* to train *one* saleswoman for your own business? Think it over, Mr. Photographer; think it over. — WALTER C. THOMPSON.

WASHING POSTCARDS

To the average photographic worker the washing of prints always presents a problem which is not easy of solution, and postcards in particular, on account of their extra weight, have a tendency to sink to the bottom of the tank, and lie there in a heaped-up mass. In this condition it is impossible to get rid of hypo from the film, and consequently postcards done in this fashion cannot be said to be washed at all, and in a few months' time spots and stains are nearly certain to make their appearance on the cards. A very simple way of making sure that the cards will be thoroughly washed is to use the rack in which the plates are placed for washing. A quarter-plate rack is just right for postcards, as when these are placed in position the cards will be slightly bent, and thus kept firmly in the grooves. Some cards have a tendency to float to the top of the water, and this can be prevented by fastening a piece of string over the top of the cards, and fixing the ends to the edges of the rack. This will be found one of the most convenient ways of washing cards to the worker who only does a few at a time. — *Amateur Photographer.*

To clean trays, use a mixture of bichromate of potash and sulphuric acid. Make a deep orange solution of bichromate, about 10 ounces, and add to it slowly about ¼ ounce of sulphuric acid, pouring in the acid in a fine stream. This mixture will take care of any ordinarily refractory stain.



THE PHOTOGRAPHIC REVIEW

DOUBLE-TONE POSITIVES. — R. Namias suggests the following method of obtaining lantern and stereoscopic slides, which are deep brown in the shadows with blue highlights and halftones, and are said to give very fine effects. The plates are developed in the usual way, though somewhat denser than usual and after fixing and washing are immersed in a 5% solution of formaldehyde to harden the gelatine and then toned in a gold bath of the following composition: —

Ammonium sulphocyanide	70 g
Ammonium carbonate	20 g
Chloride of gold, 1% sol.	100 ccm
Distilled water	1000 ccm

The temperature should be 40° to 50° C. and as soon as the halftones turn blue the plate should be well washed. (*Il Progresso Foto.*, 1919; *Bull. Soc. franç. Photo.*, 1920, **62**, 143.) The use of gold sulphocyanide for obtaining blue tones on slides is quite old, as the Ilford Alpha plates were thus to be treated and these date back to about 1890; the only novel point seems to be here the use of the hot bath and stopping the action before it has reached the shadow parts.

HOME-MADE CARBON TISSUE FOR DYEING-UP. — R. Namias proposes making a 20% solution of gelatine and after filtering through muslin coating on glass in the ratio of 1250 ccm per sq. meter. After allowing the plates to set in a level position, he squeegees moistened paper to them, allows to dry and then strips. Old negative glasses can be used and the drying takes rather a long time. When dry the paper should be sensitized in a 3% solution of potassium bichromate containing an equal weight of neutral sodium citrate. After exposure the paper is squeegeed, gelatine side down, to glass coated with 5% solution of gelatine to which has been added 1% of a 1% solution of chrome alum, and in fifteen minutes the print can be developed in water at 40° to 50° C. A colorless relief is thus obtained which can be stained up with aniline dyes (*Il Progresso Foto.*, 1915; *Bull. Soc. franç. Phot.*, 1920, **62**, 96.)

HOME-MADE PIGMENT FOR GUM-BICHROMATE PROCESS. — "Anon." suggests the following method for preparing a good sepia pigment for this process, which while it is some trouble is much cheaper than the usual tube water-color and is without any grain. Dissolve 10 g nitrate or chloride of cobalt in 100 ccm water and add 5 g sodium carbonate, whereby hydrated oxide of cobalt is precipitated. Boil the mixture and add gradually enough 5% solution of potassium permanganate to give a permanent rose color to the solution; about 40 to 50 ccm will be required. Then filter, wash the filtrate with distilled water, and allow to stand 24 hours to dry, when a paste will be obtained that can be used in the usual way with the normal gum solution. (*Il Progresso Foto.*, 1918; *Bull. Soc. franç. Phot.*, 1920, **62**, 70.)

TONING PRINTS BY REDEVELOPMENT. — Manly suggests that various tones can be obtained by bleaching prints with the following baths and redeveloping with the given developers:

A.	Potassium ferricyanide	33 g
	Ammonium bromide	40 g
	Water	1000 ccm
B.	Cupric sulphate	50 g
	Sulphuric acid	6.5 ccm
	Common salt	50 g
	Water	1000 ccm
C.	Potassium bichromate	20 g
	Sulphuric acid	50 ccm
	Common salt	100 g
	Water	1000 ccm

After bleaching in one of the baths the prints should be washed for 20 to 30 minutes and then redeveloped in the following:

I.	Metol	10 g
	Sodium sulphite	33 g
	Sodium carbonate	66 g
	Water	1000 ccm
II.	Hydrochinon	33 g
	Potassium metabisulphite	16 g
	Potassium bromide	5 g
	Water	1000 ccm
III.	Ammoninum carbonate	100 g
	Water	1000 ccm

The tones are somewhat dependent on the make of the paper, but the following will give a general guide to those obtainable. Bleach in I; develop in equal parts of II and III, diluted with more or less water. The tones obtained are comparable to those of bromide papers toned with gold and are a rich purplish brown. Bleach in equal parts A, B, C; develop in I; result is good blacks slightly wanting in depth. Bleach in B; develop in I; result is a splendid velvety blue-black in the shadows like carbon paper. Bleach in C; develop in 4 parts II, 6 parts III and 2 parts water; result, distinct intense brown with pure whites. Bleach in C; developer, 1 part II, 1 part III and 1 part water; result, a good sepia like sulphur toning. Bleach in C; developer, 2 parts II, 1 part III and 2 parts water; result, bright brown.

HOME-MADE PAPERS. — R. Namias gives the following methods of preparing salted papers which, as the solutions can be applied to almost any paper, may be useful:

Gelatine	25 g
Zinc chloride, cryst.	6 g
Citric acid	5 g
Ammonia	6 ccm
Distilled water to	1000 ccm

The gelatine should be soaked in half a liter of water, the excess of water poured away, and the gelatine melted on a water bath. Dissolve the citric acid in half the water, add the ammonia and then the zinc chloride, finally add to the gelatine and filter after making the bulk up to 1 liter. Tartaric acid may replace the citric, and then darker browns are obtained. The paper should be immersed in the warm solution and hung up to dry. It is sensitized with the aid of a flat brush and either of the following baths may be used:

Silver nitrate	12 g
Citric acid	5 g
Glycerine	5 ccm
Water	100 ccm

or

Silver nitrate	12 g
Distilled water	50 ccm
Ammonia	q. s.

Enough ammonia must be added to form a clear solution, then add

Lactic acid, pure syrup	5 ccm
Distilled water to	100 ccm

This will keep indefinitely in the dark, but the printing is rather slow; greater contrasts can be secured by the addition of 1 to 2 ccm of a 5% solution of potassium bichromate. A more rapid paper is obtained with the following:

Silver nitrate	10 g
Uranyl nitrate	5 g
Lactic acid	5 ccm
Distilled water to	100 ccm

The following gives sepia tones, but the stock solution will not keep:

Ammonio-citrate of iron, green	20 g
Distilled water	50 ccm
Potassium bichromate, 5% sol.	5 ccm
Silver nitrate	10 g
Distilled water to	100 ccm

Dissolve the silver in a little water, add to the other ingredients in solution, amd make the bulk up to 100 ccm. After printing, this paper should be immersed in a 1% solution of oxalic acid, then washed and fixed in a 2% hypo bath. A casein paper is made as follows:

Ammonium chloride	0.4 g
Sodium citrate, neutral	4 g
Water	40 ccm

Dissolve and add

Casein	4 g
Ammonia	5 ccm
Water	35 ccm

Then add

Silver nitrate	7 g
Distilled water	20 ccm

This paper will not keep well, but can be made more stable by immersion in a 3% solution of citric acid (*Bull. Soc. franç. Phot.*, 1920, **62**, 38).

Cyanotype or Blue-Print Process. — Bertsch obtained a German Patent, 320,981, for an improvement in this process, in which potassium-ferric oxalate and neutral potassium oxalate were to be used, the paper being said to be yellow before exposure and to give deep blue images with pure whites. This would have been a great boon, as the usual ferric-ammonium citrate was particularly dear in consequence of the war. Valenta has tried out this patented formula and states that in the first place it is impossible to carry out the patent, as the salts would not dissolve in the proportions given; further, with the more soluble ammonium salts, while the paper was yellow when coated it turned green during drying, quickly spoiled and gave impure whites and weak blues (*Phot. Korr.*, 1921, **58**, 107).

Pinaflavol, a New Sensitizer for Green. — Up to the present time there has been no practically satisfactory sensitizer for the spectral green. Auracin G and acridin orange NO are the only two dyes that have received any recognition, and the disadvantage of the latter dye is that it is so tenaciously retained by the gelatine that nothing but repeated alcohol baths would remove it. E. König reports the discovery of a new basic yellow dye by Dr. Schuloff, of the Hoechst Farbwerke, which sensitizes up to the D-line in the yellow with a maximum at E, wavelength 530, and joins up without a minimum to the sensitiveness of the ordinary silver salts. There is no sensitiveness to red, and green pigments are rendered lighter than yellow ones. Its chief use would seem to be in three-color work, as it will permit of the use of a yellow instead of a green filter. It can be employed as a bath in a strength of 1 : 50,000, the bathing time being 2 minutes, then washing the plates and drying, or it may be added to the emulsion. Alcohol may be added to the bath, but then the general speed of the plate is lowered. For collodion emulsion the addition of 20 ccm of a 1:1000 alcoholic solution per liter of emulsion is advised. Like pinacyanol it is not destroyed by organic acids, but only by mineral acids. So far attempts to combine this with the isocyanins have proved a failure. (*Phot. Rund.*, 1921, **57**, 80; *Brit. J. Phot.*, 1921, **68**, *Col. Phot. Supp.* **14**, 16; abst. *Sci. Tech. Ind. Phot.*, 1921, **1**, 37; *J. S. C. I.*, 1921, **40**, 324A).

Eder confirms the great sensitiveness of the plates bathed with this new dye and comparative tests with the Eder-Hecht sensitometer showed that a pinaflavol-bathed plate had a green sensitiveness of 1.8, a commercial erythrosin (orthochromatic) plate gave 0.3, and an erythrosin bathed plate 1.2, the sensitiveness to blue being taken as unity, and an amyl acetate lamp being used as the light source (*Phot. Korr.*, 1921, **58**, 29; *Phot. Rund.*, 1921, **57**, 87, spectra illustrating the notes).

Whether this is to be of any great practical value is an open question; certainly in ordinary orthochromatic work we should not accept as correct the reproduction of greens brighter than yellows; in three-color work the practice, and the correct one, is to use the same plate for all three exposures, because in this way one has the gradations more alike in the three negatives. If it becomes possible to combine this with the isocyanins, then it may be extremely useful. Certainly the possibility of using yellow filters instead of green is alluring, as the green filters always absorb more light than the others.

Later information from König states that pinaflavol sensitizing may be combined with that of pinacyanol, and presumably with that of other isocyanins, by immersion of the plate for two minutes in:

Pinacyanol 1:10,000 alc. sol.	3 ccm
Water	100 ccm

After a brief rinsing, immerse in:

Pinaflavol, 1:1,000	¾ ccm
Water	100 ccm

Drying without washing. Plates thus treated require only half the exposure through the green filter as compared with plates sensitized with pinachrom (*Phot. Rund.*, 1921, **57**, 193; abst. *Sci. Tech. Ind. Phot.* 1921, **1**, 78).

A Rapid Hydrochinon Developer. — Lüppo-Cramer has already indicated that rapid development can be obtained with hydrochinon by the addition of safranin, and now states that small quantites of amidol have the same effect. The formula for the hydrochinon developer will be found on p. 658 and the safranin solution there given must be replaced by an equal volume of water. The amidol solution is one of 0.5 per cent in a 10 per cent solution of anhydrous sodium sulphite, and of this 5 per cent should be added to the developer (*Der Phot.*, 1921, **31**, 109; *Rev. Sci. Tech. Ind. Phot.*, 1921, **1**, 50).

Playertype Redivivus. — M. Ullmann has obtained a German Patent, 287,214 for a process of obtaining copies of drawings, printed matter, etc., without the use of a camera. A bichromated colloid is pressed into contact with the printed matter, etc., and the exposure made through the sensitive surface; the process is named "Manuldruck," obviously a play on the inventor's name. E. Albert has tried this out and recommends either of the following solutions:

Albumen	6 ccm
Fish glue, Le Page's	4 ccm
Ammonium bichromate	4.5 g
Water to	100 ccm

or

Fish glue	30 ccm
Ammonium bichromate, 10% sol.	24 ccm
Grape sugar	2.5 g
Water	800 ccm

Dissolve the sugar in about one fourth of the water before adding to the other ingredients. Glass should be coated with a whirler while being gently heated. The dried films are very thin, slightly yellow and quite transparent.

The exposure is best effected with a half-watt lamp at a constant distance, the glass being placed with the coated side down on the drawing. After exposure, development is effected with hot water, and then the gelatine can be stained up with chrysoidin and fuchsin, or by immersion in a 4% solution of potassium permanganate, which gives a deep brown manganese dioxide deposit that is very nonactinic. Such negatives can be used for any photomechanical process, or printed on silver paper in the usual way (*Phot. Korr.*, 1921, **58**, 109).

This process, or rather the principle of exposing through a sensitive surface, was brought into prominence by J. H. Player (*Phot. J.*, 1897, **37**, 222). He placed the object to be copied face up on a sheet of black velvet or paper, a sheet of bromide paper face downwards on it, then a sheet of plate glass to keep it in contact, and a sheet of green glass. On development a negative was obtained; it was considered that the light was reflected by the white parts of the print and absorbed by the black. It was also stated at this meeting that the process was originally suggested by R. Colson (*Bull Soc. franç. Phot.*), but this it has not been possibly to verify. Various workers had tried the process but without marked success. Player later (*Phot. J.*, 1903, **43**, 15) again brought up the subject and stated that he found it was better to use slow papers, such as Velox or other development papers, and that he placed the engraving on a sheet of plate glass, then over that the paper and on top a flat cell filled with a 1:1400 solution of picric acid, faintly acidulated with hydrochloric acid, and if necessary more glass to obtain flatness. The exposure varied from 30 seconds to some minutes according to the light and sensitiveness of the paper. In *Photogram*, 1902, 377, Player also dealt with the subject and stated that he used as developer a mixture of hydrochinon 2, potassium iodide 4, sodium sulphite, dry 12, water 1000 parts, with a little caustic soda, and a very foggy negative was obtained that would, however, give good prints. R. Reiss (*Jahrbuch*, 1903, **7**, 110) describes the same process and states that he had obtained the best results with printing-out papers.

The German Patent Office has always been held up as the pattern for all other nations, as it is supposed to actually examine the specifications and not be content to refer to prior patents only, but to take into consideration what is published in the literature; but even the great Gods nod sometimes and a patent for precisely the same thing was granted to K. von Amhard (D. R. Pat. 204,876, 1907). He was promptly dropped upon by Eder and the antiquity of the process pointed out (*Jahrbuch*, 1911, **25**, 483; *Phot. Korr.*, 1910, nos. 598 & 601). The process is one well worth attention for those who have to copy a lot of printed matter, and I have obtained some good results from printed matter although there was type on both sides of the sheet. The real difficulty is hitting the exposure, and obtaining close contact; but as one can easily make yellow screens by staining up fixed-out plates with aniline dyes, it may be worth someone's while to try it. The purpose of the yellow screen is probably merely to cut down the ultra-violet and deep blue.

DECOLORATION OF SAFRANIN-STAINED NEGATIVES. — Anon. suggests that the persistent stain of safranin may be eliminated by treatment of the negatives with

Potassium permanganate	2 g
Hydrochloric acid	10 ccm
Water to	1000 ccm

Any brown stain caused by deposition of the manganous salts can be removed by treatment with a 1 per cent solution of sodium bisulphite; then after washing, the negative must be redeveloped, as it bleaches in the above bath, silver chloride being formed (*Il Progresso Foto.*, 1921, **28**, 96).

NON-FLAM FILMS. — G. Bonwitt states that hydrated acetyl-cellulose is not unaffected by water and gives the following data: —

	Celluloid	Acetyl-cellulose With volatile solvents	Acetyl-cellulose With less volatile solvents
Expansion in water, %	0.6	1.55	0.5
Contraction after drying	0.5	0.5	0.5
Resistance to cutting	80-90	44	67

A film that shows more than 1-25 per cent contraction in 6 months is useless for projection, as the perforations will not fit the sprockets. (*Chem. Ztg.*, 1920, 973.)

The properties of acetyl-cellulose depend considerably on the method of esterification, the solvents and the use or non-use of a plastifier. One of the chief troubles with cellulose acetate is that the perforations become deformed after a few runs and consequently the film jumps the sprockets. A good non-flam film is much to be desired, but it is questionable whether it will be found in cellulose acetate. Bayer, of Cologne, has just introduced commercially in Germany, roll and pack films, orthochromatic and non-curling without gelatine back-coating.

A SINGLE-SOLUTION ORTOL DEVELOPER. — W. Frerk gives the following as an excellent one-solution developer:

Ortol	40 g
Sodium sulphite, dry	50 g
Caustic potash	60 g
Potassium bromide	3 g
Water to	1000 ccm

For use mix with from 5 to 10 volumes of water. The stock solution keeps well, and in the weaker dilution with the addition of more bromide is suitable for papers (*Der Phot.*, 1920, **30**, 312).

THE BI-GUM PROCESS. — It is frequently a

ouble with this process that pure whites are diffi-
ılt to attain. The following is said to give excel-
nt results in this respect. Dissolve by heat in a
ass or porcelain dish 8 g potassium bichromate in
ccm water, and add ammonia till the solution
ıells distinctly of the same, then boil to expel ex-
ss of ammonia. Beat the whites of eggs to a froth,
low to stand for 12 hours till liquid, and filter.
ıe pigmenting solution is:

Bichromate solution	150 ccm
Cupric sulphate	30 g
Gum arabic, powdered	80 g
Pigment	60 g
Albumen	20 ccm
Glycerine	10 ccm

Mix well, and apply as usual to paper (*Deutsche
ıot. Ztg.*, 1921, **45**, 100).

A STABLE AMIDOL DEVELOPER. — R. Namias
ıtes that the addition of small quantities of metol
an amidol developer acts as an excellent preser-
tive. The formula recommended is:

Sodium sulphite, dry	25 g
Amidol	5 g
Metol	1 g
Potassium bromide	2 g
Water to	1000 ccm

This will keep for several days if well corked up
Progresso Foto., 1921, **28**, 45; *Le Procédé*, 1921,
, 39.)

A NEW WAY TO CLEAN OFF RUST. — This has but
lirect connection with photography, but may come
handy sometimes. R. C. Griffin states that the
dition of 1 per cent of formaldehyde to equal
lumes of hydrochloric acid and water reduces
action on steel, iron or brass from 50 to 80 per
ıt, without affecting its action on rust. (*J. Ind.
g. Chem.*, 1920, **12**, 1159.)

PAPER SAFELIGHTS. — R. Namias proposes the
of translucent vegetable parchment paper for
elights. It should be immersed for 5 minutes in a
rm 10 per cent solution of gelatine and hung up
dry, then stained up in one of the following baths:

A.	Tartrazin	2% sol.
B.	Chrysoidin	0.1% sol.
C.	Blue carmine	1.0% sol.
D.	Methyl violet	0.1% sol.

A gives a bright yellow paper and one thickness
uitable for development papers. Two sheets of
and one of A are suitable for bromide papers
l slow plates. Two of C and one of A are suit-
e for panchromatic plates, if a not too bright
ıt be used; another A makes it safer. One of A
l one of C may be used for fast ordinary and
hochromatic plates (*Il Progresso Foto.*, 1920, **27**,
. The use of stained paper dates back to the
y early days of collodion, and Namias (*Il Pro-
sso Foto.*, 1905, 67) suggested the use of paper
ned up with 1% tartrazin and 0.1% rhodamin.

FILTER DISTORTION. — Zaar points out in a long
thematical paper, which cannot be usefully
tracted, that a filter placed in front of a lens
ses barrel distortion, and that this must be con-
red when reproducing objects the same size for
ntific purposes. In such cases it is advisable to
e one filter in front of the lens and another be-
d it, and their thicknesses should be in propor-
to the distances between the optical center of
lens and the object and the image respectively
ot. Korr., 1919, **56**, 301).

THE TRUE-TO-SCALE PROCESS. — A. Albert gives the following formula for preparing the gelatine mixture for this process:

Gelatine	160 g
Glycerine	15 ccm
Ox-gall	25 g
Ferrous sulphate	2 g
Water to	1000 ccm

Soak the gelatine in the water, melt and add the other ingredients and finally the iron salt dissolved in a little water. Cast the mixture on to sheet zinc, which has been previously roughened with emery cloth to cause it to adhere; the coating should be about 2 mm thick when dry. A ferroprussiate print, which must not be washed, is placed on the surface and gently dabbed into contact with the hand or a pad of cloth, and left for from 30 to 60 seconds. The image is rolled up with greasy ink like any ordinary collotype plate, and prints can be pulled therefrom, as the ink only takes where the iron salts reduced by the action of light have acted. With care 30 pulls may be made (*Phot. Korr.*, 1919; *Le Procédé*, 1920, **22**, 40). This process is really good for reproducing blueprints. One wonders why someone has not put a special ink on the market, with which it would be possible to write or make diagrams and then squeegee down.

TEST FOR PYROCATECHIN.— B. Eisner states that barium hydroxide is an excellent test for pyrocatein, as clear pearl gray glistening leaflets are formed, of $C_6 H_4 O_2 Ba$. 3¼ $H_2 O$. This will detect 1 per cent of pyrocatechin, while hydrochinon and resorcin will not give the reaction (*Sitzber. Akad. Wiss. Wien.*, 1919, **128**, 107; *Phot. Korr.*, 1920, **57**, 163).

SIMULTANEOUS DEVELOPMENT AND FIXING. — Lumière & Seyewetz have dealt with this subject, which periodically appears as a burning question, and recommend the following developers as suitable:

Sodium sulphite, dry	32 g
Chloranol	6 g
Caustic soda	5 g
Water	1000 ccm
Hypo	60 g

or

Sodium sulphite, dry	32 g
Metoquinone	6 g
Sodium tribasic phosphate	100 g
Water	1000 ccm
Hypo	40 g

In the first formula the caustic soda may be replaced by 140 g of the tribasic phosphate and the hypo must then be reduced to 48 g. The action takes from 20 to 35 minutes, and the process is said to be extremely valuable for overexposed plates, in fact unless the plates are overexposed good results are not obtainable. The quantity of solution to be used should not be less than 50 ccm for a 9 x 12 cm plates (= 17 sq. ins.). The first formula is more suitable for chlorobromide emulsions, in which class all development papers fall, and in the case of prints the developing should not exceed about 2 minutes, as there is danger of the whites staining. (*Bull Soc. franç. Phot.*, 1920, **62**, 234).

It is doubtful whether anyone really wants to simultaneously develop and fix, except the itinerant artist who takes your portrait or your house, and hands you in a few minutes a monstrosity which may or may not be a good likeness. This is undoubtedly a throwback to the old days of the wet collodion or collodion emulsion ferrotype plates, which were also known as tintypes. With these the film was so thin and non-absorbent of water that one could fix with cyanide, rapidly wash, flood with alcohol and dry, all in about five minutes. The results lasted well, as some are in my possession taken over 40 years ago and they seem as good as when first made. With gelatine as the vehicle, one has a water-absorbent material, which will not dry so quickly, no matter how thin it may be; so the introduction of the gelatine tintype plate led to the attempts to combine developing and fixing.

The first note that it has been possible to find is by W. D. Richmond (*Brit. J. Phot.*, 1889, **35**, 827), who stated that the subject had been brought up at the Photographic Club in London and that no one knew anything about it; trying it out with a modification of Wellington's silver intensifier, he had found that the addition of free silver was essential and came to the conclusion that the process was of no practical value.

Milton B. Punnett, who recommended it for transparency work (*Brit. J. Phot.*, 1898, **45**, 126; *Phot. Woch.*, 1898, 309; *Jahrbuch*, 1899, **13**, 477), suggested the following formula:

A.	Potassium metabisulphite	2 g	35 gr
	Ortol	3 g	70 gr
	Water	400 ccm	10 oz
B.	Caustic soda	4 g	60 gr
	Potassium bromide	4 g	60 gr
	Water	500 ccm	16 oz
C.	Hypo	25 g	1 oz
	Water	500 ccm	20 oz

For use mix 1 part A, 1 part B and 2 parts water.

Eder (*Phot. Korr.*, 1899, **36**, 657) reported unfavorably on this process, as did also H. Spörl (*Der Phot.*, 1899, 95).

P. Hanneke (*Phot. Mitt.*, 1900, **36**, 141; *Jahrbuch*, 1900, **14**, 550) suggested pyrocatechine and Ellon & Co. introduced a commercial preparation of this, as Elconal F., which was said to have the following composition:—

A.	Sodium sulphite, dry	200 g	3-1/5 oz
	Caustic potash	93 g	651 gr
	Pyrocatechin	93 g	651 gr
	Water	1000 ccm	16 oz
B.	Hypo	200 g	3-1/5 oz
	Water	1000 ccm	16 oz

For use mix A 12 parts, B 20 parts and water 30 parts.

The subject was dealt with in *Amat. Phot.*, 1900, **32**, 492, but nothing new was advanced. J. E. Thornton & C. F. Rothwell obtained English Patents 17,292; 17,738, 1899 (*Brit. J. Phot.*, 1900, **47**, 445) for the use of developing and fixing agents, mixed with dextrine and sugar, applied to the back of plates and films. After exposure all that one had to do was to place them in water and they developed and fixed; pyrocatechin was one of the developers suggested. Whether this ever got beyond the patent specification is doubtful. T. T. Baker (*Phot. J.*, 1904, **44**, 1; *Brit. J. Phot.*, 1904, **51**, 128 suggested:

Hydrochinon	7.5 g	52.5 gr
Potassium metabisulphite	15 g	105 gr
Caustic potash	50 g	350 gr
Hypo	100 g	1 3/5 oz
Water	1000 ccm	16 oz

or

Edinol	7.5 g	52.5 gr
Sodium carbonate, cryst	50 g	350 gr
Sodium sulphite, dry	25 g	175 gr
Hypo	100 g	1 3/5 oz
Water	1000 ccm	16 oz

In the discussion following this paper, J. Spiller stated that he had tried simultaneous development and fixing with ferrous sulphate before the days of gelatine plates, but finding it a failure, gave it up.

J. Pigg (*Brit. J. Phot.*, 1904, **51**, 87) tried pyro-ammonia and cyanide, but the results were too thin; he finally found that the following gave the best results, but stated that it was doubtful if there was any advantage in the process:

Pyrogallol	1.5 g	10.5 gr
Amidol	1.5 g	10.5 gr
Sodium sulphite, sat. sol	240 ccm	4 oz
Sodium carbonate, sat. sol	480 g	8 oz
Potassium cyanide, sat. sol	240 g	4 oz

V. Crémier (*Phot. Gaz.*, 1910, 61; *Brit. J. Phot.*, 1910, **57**, 358; *Brit. J. Alm.* 1911, 549; *Jahrbuch*, 1910, **24**, 545) suggested an amidol solution of:

Amidol	10 g	70 gr
Sodium sulphite, dry	50 g	350 gr
Hypo	2 oz	140 gr
Water	1000 ccm	16 oz

T. T. Baker (*Brit. J. Phot.*, 1911, **58**, 916) gave another edinol formula:

Hypo	30 g	210 gr
Potassium metabisulphite	40 g	270 gr
Sodium carbonate, cryst	120 g	840 gr
Potassium bromide	1 g	7 gr
Water	1000 ccm	16 oz

to which immediately before use, 2 per cent of edinol was to be added. R. Raymond (*Phot. Rev.*, 1909; *Brit. J. Phot.*, *l. c.*) suggested:

Hydrochinon	8 g	56 gr
Metol	4 g	28 gr
Sodium sulphite, dry	30 g	210 gr
Sodium carbonate	80 g	400 gr
Hypo	5-6 g	35 to 42 gr
Water	1000 ccm	16 oz

V. Cremier also later (*Brit. J. Photo.*, *l.c.*) gave the following as an improvement, particularly for lantern-slide work, as giving generally black tones:

Sodium sulphite, dry	15 g	105 gr
Hydrochinon	2.5 g	17.5 gr
Caustic soda	1.5 g	1.5 gr
Potassium bromide	1.5 g	10.5 gr
Water	1000 ccm	16 oz

which might be kept as a stock solution, and the actual developer was:

Stock solution above	30 ccm	4 oz
Water	60 ccm	8 oz
Hypo, 20% sol	15 ccm	2½ oz

Crémier found that this method was applicable to bromide papers, if the bromide was increased, but with development papers the results did not prove satisfactory, on account of want of vigor with an increase of fog.

Rubin Haysede (*Brit. J. Phot.*, 1910, **57**, 54) who hails from Washington, D. C. (the name is suggestive) recommended the following as good for gelatine ferrotype plates, but admitted that he had not tried it for ordinary work:

Sodium sulphite, cryst	40 g	280 gr
Hypo	320 g	2240 gr
Sodium carbonate, cryst	10 g	70 gr
Potassium bromide	10 g	70 gr
Hydrochinon	25 g	175 gr
Ammonia, 28% sol	10 ccm	70 minims
Water	1000 ccm	16 oz

J. Gaedicke (*Jahrbuch*, 1912, **26**, 6) tried Crémier's formula with some variations and came to the conclusion that his formula was the best; that the quality of the image was worse than that obtained in the usual way; it took a long time; it was not economical, as the hypo was used up long before the amidol; and there was strong fog. "Develofix" was a secret developer and fixer commercially introduced (*Brit. J. Phot.*, 1913, **60**, 444), of which little was heard.

Lüppo-Cramer (*Phot. Ind.*, 1913; *Brit. J. Phot.*, 1913, **60**, 133) recommended

Sodium sulphite, cryst.	31 g	1 oz
Hypo	248 g	8 oz
Sodium carbonate, cryst.	8 g	¼ oz
Potassium bromide	8 g	¼ oz
Hydrochinon	20 g	292 gr
Ammonia	45 ccm	1½ oz
Water	800 ccm	26 oz

F. W. Hochstetter (U. S. Pat., 1,207,142, 1916) patented the use of developers containing glycerine, hypo and citric acid, the final composition of which should be practically:

Developer	3.6 g	25 gr
Sodium sulphite, dry	1.8 g	12.5 gr
Potassium carbonate	1.8 g	12.5 gr
Glycerine	640 ccm	10¼ oz
Hypo	8.5 g	42.5 gr
Water	360 ccm	5¾ oz
Citric acid	23 g	1.6 gr

The developer used might be hydrochinon, metol, adurol, amidol, glycin or edinol.

E. W. (*Brit. J. Phot.*, 1919, **66**, 195) stated that he had frequently made up for tintype workers the following.

Hydrochinon	12.5 g	87.5 gr
Sodium sulphite, dry	50 g	250 gr
Sodium carbonate, cryst.	100 g	700 gr
Hypo	1400 g	3-1/5 oz
Ammonia	50 ccm	350 minins
Water	1000 ccm	16 oz

Otsuki and Sudzuki (*Phot. Korr.*, 1914, **5** , 214; *Brit. J. Phot.*, 1914, **61**, 541,634; *Phot. Ind.*, 1921, 573) advised the use of metoquinone, as follows:

A.	Metoquinone	6 g	36 gr
	Sodium sulphite, dry	30 g	180 gr
	Water	600 ccm	12 oz
B.	Hypo	60 g	576 gr
	Caustic soda	5 g	48 gr
	Water	400 ccm	8 oz

For use, mix the above. E. Valenta (*Phot. Korr.*, 1914, **51**, 347) confirms the good results to be obtained with this.

L. J. Bunel (*Rev. franç. Phot.*, 1921, **2**, 129; *J. S. C. I:.*, 1921, **40**, 530A) recommends:

Amidol	5 g	25 gr
Sodium sulphite, dry	30 g	210 gr
Acetone	80 ccm	420 minim
Hypo	50 g	350 gr
Water	1000 ccm	16 oz

He states that this gives greater density than the Lumière formula, more detail in the shadows and no fog. The plates must be generously exposed, and it is especially good for transparency work. L. P. Clerc (*Rev. franç. Phot.*, *ibid*, 129) confirms the good results obtainable with this, but states that the solution very quickly spoils by oxidation and by evaporation of the acetone, and it considerably slows up in an hour.

R. Namias (*Il Progresso Foto.*, 1921, **28**, 65; *Sci. Tech. Ind. Phot.*, 1921, **2**, 47), recommends the following developer:

Metol	1.5 g	10.5 gr
Sodium sulphite	30 g	210 gr
Hydrochinon	4.5 g	31.5 gr
Caustic soda	5 g	25 gr
Hypo	60 g	420 gr
Water	1000 ccm	16 oz

The time of development varies with different plates, and the ratio of hypo must be altered according to the plate and the degree of development desired. With plates tending to give flat and foggy results good results were obtained.

URANIUM INTENSIFICATION. — W. Mayer has discovered that if the intensification with uranium is not satisfactory it may be totally removed by the application of an alkali and that the pale image left behind may be redeveloped to almost its original density by treatment with any developer (*Phot. Rund.*, 1921, 81). That the uranium ferrocyanide formed on the image was soluble in alkalies is, of course, old news, and for this reason it is recommended to wash in acidulated water or only briefly in tap water. The pale image left after this treatment is obviously silver ferrocyanide and that this can be redeveloped surely is not new.

PURIFICATION OF ETHER FOR COLLODION WORK. — Valenta suggests that the following process should be used for the purification of ether before it is taken into use with collodion processes. Commercial ether is frequently contaminated with alcohol and reducing substances, and whilst the alcohol does no harm, the other impurities soon cause the decomposition of the nitro-cellulose, with other troubles if the same be iodised. Sorret & Rillier (*Compt. Rend.*, 1890, **110**, 137), proved that the presence of water caused the evolution of hydrogen peroxide, and Richardson Fortey (*J. S. C.*, 1892, **69**, 1349), that completely anhydrous ether also acted in the same way in light, therefore, it should be kept in the dark. To test whether ether is suitable for use, a little potassium iodide should be dissolved in pure alcohol, an equal volume added to the ether in a test tube, and allowed to stand for several hours; if then the mixture has become yellow or brown the ether should be purified. For this purpose a 5% solution of potassium permanganate with a small addition of caustic soda should be added and the mixture well shaken, and after 24 hours the ether should be separated from the brown aqueous layer. The test should be repeated till color is no longer formed and then it is fit for use; but it must be freed from water by shaking with freshly burnt lime and distillation (*Phot. Korr.*, 1921, **58**, 61).

PHOTOXYLIN. — Eder reports the preparation of a specially pure collodion for photographic work by the Dynamit-Nobel Co., under the above name. It is issued either in 2 or 4% alcohol-ether solution; it is clear and almost colorless; the first strength has a viscosity of 1.2 to 1.6, and the latter 2.6 to 3.0, measured by the falling sphere method. It is a mixture of the tetra-and penta-nitro-celluloses and gives perfectly structureless well-adherent films; it is very suitable for collodion emulsion or wet-plate work, or the manufacture of films and varnishes (*Phot. Korr.*, 1920, **57**, 272).

One almost gathers from the note that this preparation is manufactured from sulphite wood pulp, and, as Eder points out, some difficulties are met with if this be not very carefully purified before being used for collodion. Recourse to this source was necessitated by the shortage of raw cotton due to the war blockade. The choice of name is a little unfortunate, as a purified cellulose nitrate was introduced under the same name by Krysknsi) in 1887 (*Pharm. Centr.*, 88, **9**, 284; *Zeits. wiss. Mikro.*, 1892, **9**, 47; *Amer. J. Pharm.*, 1888, 225, etc.)

ROUND WORLD EXCHANGE CLUB

We have received so many requests to resume this department that we have decided to do so under the following conditions:

The rules of the organization will be merely the rules of ordinary courtesy and fair-play. The director will assume no responsibility beyond listing the names of members with details as to what they have and what they want in exchange. A member will have the opportunity of communicating with any other member and all details as to exchanges will be by mutual agreement. For the present we shall publish no list of members, exchange code or book of rules, but shall rely entirely upon the willingness of members to co-operate with others to make everything run smoothly. Any former member now rejoining who desires to retain his old number may do so by notifying the director to this effect. Details as to acceptance and refusal of prints, methods of sending prints, postcards, etc. will be found in the December issue and will be published from time to time in the future. New members may join at any time and their names will be listed and published as soon as possible. Those who have notified us of their intention of joining, up to the time of going to press, are —

1087 W. Wynne Bolton, B. A. "The Willowdale," So. Boston, Mass. Postcard and 5 x 7, D. O. P. Portraits, views, landscapes, pictorial art.

1088 Herbert Rexford, 312 Livingston Avenue, Albany, N. Y. 3¼ x 5½, Gaslight papers. Female figure studies.

1089 Robert Rojas, P. O. Box 1241, Calexico, Cal. Postcard. Snapshots, views, buildings, etc.

1090 Dr. J. A. Dobson, 14 West 2nd Street, Maysville, Ky. 2¾ x 3¼, 3¼ x 5½, D. O. P. All kinds of subjects.

1091 Arthur W. Moreau, 710 Townsend Place, Niagara Falls, N. Y. 2¼ x 3¼, 3¼ x 4¼, 4 x 5 and enlargements on Azo, Artura and Cyko papers, scenes of Niagara Falls and Niagara River at all seasons of the year are offered in exchange for figure studies, types and scenes, from which decorative pen drawings may be made.

1092 E. A. Ellsworth, lock box 333, Port Ewen, N. Y., offers 2¼ x 3¼ prints on D. O. papers of varied subjects.

1093 C. A. Grace, 707 So. Cedar Street, Abilene, Kansas. 2½ x 4¼, Developing out papers. Prints of hunting dogs and most any other kind of subject.

1094 K. R. Sipple, 57 South Portage Street, Westfield, N. Y. 4 x 5, Developing papers. Landscape, animals, still life.

1095 Louis A. Waters, 227 Clarendon Street, Syracuse, N. Y. 4 x 5 to 14 x 17, contact prints on Velox, enlargements on Carbon Black. Child studies, landscapes, general views, speed pictures.

1096 Jacob Kelso, Box 284, G. P. O., New York, N. Y. wants to exchange pictures showing artistic poses of women, not nude.

1097 Edward McKenzie, 125 East 34th Street, New York City, N. Y. 3 x 4, Cyko prints. New York City views.

1098 Roger B. Hernandez, 1326 Chew Street, Allentown, Penna. 4 x 5, Contact prints. Landscapes, still life, genre.

1099 Peter Kendrick, 317 South 4th Street, Brooklyn, N. Y. All sizes, glossy prints, miscellaneous subjects.

1100 J. E. Brill, 416 North 41st Avenue, Omaha, Neb. 4 x5, D. O. Papers. Landscapes, local and European, figure studies, genre, some architectural European subjects.

1101 Lucy E. Farrell, Elkader, Iowa. 2½ x 4¼. Views of Chicago, scenes of the Mississippi River.

1102 Edw. N. Johnson, 374 Union Place, Akron, Ohio, wants to get scenic views and character studies of the fisher folk in Volendam, Holland.

1103 Emmett K. Emslie, 2109 Bagley Street, Flint, Michigan. Vest pocket or larger sizes, D. O. P. General, Arizona, Kansas, Ohio, Michigan landscapes, also nature studies.

1104 Edw. L. Gilroy, Box 203, Austin, Minn. 3¼ x 5½, 5 x 7, Velox, Bromide, Carbon prints. Landscapes, historical subjects.

1105 Carl J. Wagner, 2661 East 68th Street, Cleveland, Ohio. 4 x 5, D. O. P. Photographs of forts.

1106 R. S. Nightingale, care of Progess, Clearfield, Pa. 3¼ x 4¼. D. O. P. Oddities of any sort, scenery, natural formations or otherwise.

1107 Ormison O. Hilborn, Ionia, Michigan, R. No. 4, Box No. 3. 4 x 5 to 8 x 10, D. O. P. Landscapes and figure studies.

1108 C. L. Richardson, 2705 Moyer Avenue, Des Moines. 4 x 5, 5 x 7, Contact and enlargements. Pictorial subjects.

1109 Walter L. Kelley, Elks' Club, Danville, Illinois. Any size up to 6 x 8, various developing papers and enlargements. Child studies, landscapes and views of general interest.

1110 G. W. Counter, 210 Private Delivery, Burkburnett, Texas. 3¼ x 5½ or 4 x 6, miscellaneous subjects, for a like size in return.

1111 Fred Raymond, 319 E. Onota Street, Munissing, Michigan. 3¼ x 4¼ and 2¼ x 3¼, Gaslight papers. Miscellaneous subjects.

1112 Rollin A. Osborn, 917 East 149th St., Cleveland, Ohio. Any size, contact prints or enlargements, art and landscape subjects.

1113 Harry A. Flynn, 325 State Street, Brooklyn, N. Y. 3¼ x 5½, Various printing processes, various subjects.

1114 Louis Wilfred Osborne, Howard Avenue, Bridgeton, R. I. No sizes, printing processes or subjects specified.

1115 Horace T. G. Bush, 137 Manhattan Avenue, Jersey City, N. J. 2C Kodak and 5 x 7, D. O. Papers. Landscape and night scenes.

1116 D. H. Rood, 926 Charlotte, Detroit, Mich. 3¼ x 5½, D. O. P. Views.

1117 Chester Demarees, White, South Dakota. 3¼ x 5½, 2¼ x 3½, D. O. P. Local landscapes and pictures of domestic life, animals.

1118 John E. Dorwart, 345 S. Beaver Street, Lancaster, Pa. 2¼ x 3¼, Gaslight papers. Local scenes, etc.

1119 Edmondo Agostini, 330 Arcade Building, Norfolk, Virginia. 5 x 7, Azo. Portraits.

1120 Edwin Sloane, Apartment 24, 351 West 14th St., New York. Offers all sizes of prints up to 6½ x 8½. Subjects — Views in China, Japan and Java; portraits of children, studies of boys at play, beach scenes, boys diving, etc. Wanted:

pictures of children at play, "Old Swimmin' Hole" pictures and the like.

1121 Frank Shea, Roma Theatre, Youngstown, Ohio, offers to exchange 3¼ x 5½ and 5 x 7 Azo and Velox prints, subjects; girls and nature studies.

1122 D. M. Baltimore, 115 E. Long Avenue, New Castle, Pa. 3¼ x 4¼. D. O. P. Various subjects.

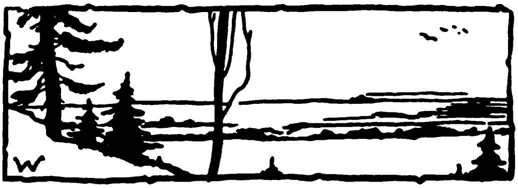
1123 R. H. Addison, 29 Armandice Street, Dorchester 24, Mass. 2½ x 4¼ and 2½ x 1½. Marines and landscapes.

1124 Roch Royer, 753 St. Denis Street, Montreal, Canada. 2½ x 4¼ prints of pictorial subjects.

1125 Cyril A. Wilson, 35 Marion Street, Brooklyn, New York. 2¼ x 5½. Developing out papers. Various subjects.

1126 W. S. Turner, 3006 Landis Street, Pittsburgh, Pa. 2¼ x 3¼. D. O. P. Landscapes, marine, genre, old mills, etc.

1127 Charles J. Roth, 435 West 50th Street, New York City. 5 x 7, 10 x 15. Gaslight papers, glossy, ferrotyped. New pictures, marine subjects and views around New York.



LOCAL MANIPULATION

To an old-timer at photography there is a never-failing fascination in a photographic supply store, especially if it be one of those well-stocked stores with boxes of plates, and bottles of chemicals, and all sorts of mysterious looking packages on the shelves behind the counter. Who that has a photographic soul behind his ribs (or wherever it is a soul is supposed to reside) can resist the come-hither appeal of such a treasure-house? Certainly not I.

In truth, when life grows stale or the wife has been unkind, often for every solace have I sought my dealer, hoping at this fountain-head of photographic pleasures to get a suggestion or a thought or a glimpse of some new photographic thing upon which my imagination might feed with the old-time zest.

During one such call a few days ago, I fell into conversation with another customer and the dealer, a sort of three-cornered discussion which traveled ar afield before we reached an end.

We discussed the war and the war's effects. "You can't kick," I suggested. "The war gave your photographic business a most wonderful boost. You must have sold a whale of a lot of cameras."

Friend Dealer did not look especially happy. "I don't like booms," he said. "They leave a bad taste in the mouth. What's the use of a big rush of usiness if it all fades away about the time when you et used to it? The photographic business would be etter off if there never had been any boom."

The Third Party pooh-poohed this. "You're just suffering from a bad case of deflated Ego," he observed, "like most of the other merchants. Look at the increase in amateur finishing. There's a gain here, isn't there?"

Friend Dealer had his doubts. "Let me tell you something," he objected. "There was a time when selling photographic goods was a nice little business. People came to you and asked your advice and took it. They developed and printed their own pictures and brought them in to show to you and see what you thought about them, and bye and bye they wanted a better camera so that they could make better pictures, and they asked your advice about that. Picture-making was a real interest to them. They took pains with it. They kept albums, and made calendars, and some went in for coloring or lantern slides or something like that. It was a nice business.

"But look at it now. Where there was one place that sold photographic supplies then, there are a dozen now — or it seems so. I might as well be running an A. and P. grocery business. The heart of the thing seems gone."

"Well, why be such a gloom about it?" queried the Third Party. "You're forgetting the old disadvantages. When the business was young you had to work harder to make a sale. You had to talk the stuff up. You had to know more about it and explain it, and take up a lot of time telling how to develop and make prints. Now the goods sell themselves. Photography has been accepted by the mass. It's well advertised. All you have to do is to hand out the items asked for. The selling's easier, and you can save your time for something else."

The Dealer surveyed us both with a pained expression. "My friend," he remarked, "you look bright, but you talk silly. I wonder where you have been in the past eighteen months. Your dope is out of date.

"Sales *were* easy. But whenever sales become so easy that you don't have to work to earn them, it is time to worry. Some of us see that now; we didn't see it so clearly a couple of years ago. We thought we had the photographic habit fastened on the mass of the people like eating beef, and ham and eggs, and chewing gum, and wearing pajamas instead of nightshirts. It was all fixed: all you had to do was to hand out the stuff. No need to urge it — no need to have clerks who understood it. Just hand it out. So much camera, so much film, prints ready Tuesday at 10, thank you, come again; you're next. Brother, what can I do for *you*?

"Do you think that was a healthy state of affairs? Do you think it was a good thing when an enthusiast came along and wanted to chat a bit to feel that he was a nuisance?

"Let me tell you that when enthusiasts come around here now they get a lot of service. For one thing, they aren't so much in the way. But there's a better reason than that: they're not quitters. They stay with photography, for it means something to them. They don't stop seeing the extra value of a higher-priced camera. I'm going to cultivate enthusiasts. I wish I had kept on cultivating them, the way I had to do in the old days. That's the kind of competition that is going to count most in this business during the next few years, in my estimation."

With which thought the conversation drifted into other channels, and presently I took my way homeward, reflecting that it is an ill wind indeed which blows no one good. If Friend Dealer succeeds in producing a few more enthusiasts in this town for me to hobnob with, what care I if there are a few casualties among the local snapshotters? — THE INTENSIFIER.

THE FOREST FIRE J. B. GALE

[illegible]

[illegible] that could not be photog [illegible] without too much halation, and [illegible] small related ob [illegible] table with a suitab [illegible] can be done very satisfactor [illegible] can be so effectively con [illegible]

[illegible] so popular a winter [illegible] that the satis [illegible] needs elaboration [illegible] that one's results [illegible] show until h [illegible] who can make go [illegible] enlarging, w [illegible] his work [illegible] three go [illegible] home have [illegible] several album [illegible] vain, must be made for some one of them when it is recalled in the course of a conversation. If pictures are worth taking, they are worth preserving. An album should be kept — and kept up to date. There are various methods. One of the best is to keep a general series, inclusive of every print that passes muster, with special albums to hold the cream of the collection, or such as one wishes to show to all who express an interest.

Make the most of the winter. Get cleaned up on the past season's work before the spring and summer come again. You will enjoy your new opportunities the more, and be stimulated to more definite achievement by a better appreciation of what you have already accomplished.

THE ILLUSTRATIONS

The two pictures shown this month are from J. B. Gale, our old reliable, who says he was up in the mountains (of Washington) again this last Fall and made quite a few records as reminders of the good times he had. Incidentally, he caught a twenty-inch and a twenty-one inch rainbow trout, which statement, recalling some trout pictures previously sent us, we can well believe. Mr. Gale says he is as big a crank on fishing as he is on photography, adding, "I have carried that hobby to the extent of making all my rods and flies. I have hanging up before me now twelve rods of my own make that weigh from 3½ to 6 ounces, and, if I do say it myself, some of them are beauties." The prints are postcard size.

THE QUESTION BOX

WINNING ANSWER TO NOVEMBER QUESTION

Have you felt a desire for a type of camera not to your knowledge obtainable at the present time? If so, describe it and your reasons for wanting it.

Foreword by Question Box Editor. — This question brought a large number of answers, a much larger number than was elicited by any previous question. It is evident that among experienced amateur photographers there is a very keen appreciation of camera values — as well as a great diversity of taste regarding type and style of apparatus.

When a contest editor faces the task of selecting the winner from an imposing mass of contributions, he is likely to feel appalled, and yet in the end the selection is usually a fairly simple matter. This is due not to exceptional mental powers on the part of the judge, but to experience in applying method to the problem of arriving at a decision. In the present instance, the judge was familiar with pretty near every camera on the market, as well as a good many which have been withdrawn, and with this knowledge he was able to weigh the technical merits of the various points mentioned, but it was not on this basis principally that the winner was selected.

ALONG THE TRAIL J. B. GALE

Anyone who consults the patent office records will find an enormous number of designs for photographic apparatus, and it is a well-known fact that camera manufacturers are continually besieged by inventors and amateurs who have worked out features and devices and complete cameras which they believe to be the last word in camera efficiency. Not a few of these are things already patented by someone else, frequently they are features formerly used in cameras but later on discarded, and in the majority of cases they are commercially impractical, for one reason or another — generally for some reason which the proposer is slow to appreciate.

It was with an understanding of this phase of the matter that in offering the November question we made this statement: "Answers will be judged from the standpoint of practical value, probable popularity and salability, and general reasonableness." That is, we indicated that we should take the attitude of a hypothetical progressive manufacturer, willing to listen to a demand for a certain type of apparatus, even to anticipate the demand, provided it could be made and sold at a profit.

On this basis we had to reject a number of proposals for ingenious improvements, some because they would not appeal to a sufficiently large number, some because they specified costly metal construction, which involves an expenditure of thousands of dollars for tools and dies and is not justified unless a high price can be obtained or extensive sale, or both, and some because, though improvements to the mind of the writer and others like him, they would actually present a sales difficulty in the case of the larger number.

However, among this interesting assortment of answers calling for every conceivable type of camera from a miniature camera which could be carried around and used without being recognized as a camera (an old idea) to modifications of the 5 x 7 View, four answers stood out as indicating a real gap in the assortment of cameras now offered to the public. Each writer called for the same size, 3¼ x 4¼. The two answers which seemed best were remarkably alike; one was from Michigan, the other from Florida. We finally ruled out that by Mr. Ruppel, his specifications seeming somewhat too exacting on the score of salability (for competition would soon be a factor), while McKay left some leeway in this direction and also added some very pertinent suggestions regarding carrying cases. To Mr. McKay, therefore, goes the credit for the following

WINNING ANSWER

I should like to see a camera of the following description placed on the market by an American Manufacturer.

1. SIZE — 3¼ x 4¼.
2. MATERIAL — A light yet strong all-metal body, not covered with leather, which soon scars and peels under hard usage, but finished in a dull serviceable enamel; the crystal finish seen on some microscope stands would be fine.
3. LENS BOARD — A large lens board, easily removed, fastened in manner similar to larger cameras, and sufficiently large to accommodate an *f*:3.5 lens (of what focal length?) without crowding, so that a full battery of lenses might be employed.
4. ADJUSTMENTS — Rising and falling front, horizontal sliding front, wide-bed double extension with 10-inch bellows capacity, all to be operated by rack and pinion. Swing back, operated by bed braces in manner similar to 5 x 7 stand cameras. Three tripod bushings, two in box and one in bed.
5. FOCUSING — by finder and scale, also by full-sized ground glass screen with focusing hood.
6. BELLOWS — Genuine leather. Vertical axis double the horizontal, so that twin lenses may be used to make the 45 x 107 stereo pictures on a 3¼ x 4¼ plate, as regular stereos are made in a 5 x 7 view camera. This would be appreciated by many workers who would like to venture into the stereo field, but who are prevented by the extreme high prices of the cameras.
7. CARRYING CASE — Two to be provided of sole leather, fitted with invisible belt loops, one to carry camera with one single plate holder in place, the other to hold six single plate holders. This arrangement enables the camera with a supply of plates to be carried on the belt, one on each side and in such a manner that the weight is not noticed.

My reasons for wishing to see this camera introduced are these: The serious worker has come to realize that the small camera will, with the aid of the enlarger, produce results that are in every way as good as and often better than could be obtained by means of the field camera direct. The small weight, carried as described, will be the means of the photographer having his camera at hand many when otherwise it would be left at home, and fine pictures secured in consequence. An amateur who wishes to obtain stereo photo from time to time for his own individual p without thought of eventual reproduction, able to secure such photographs without t penditure of a hundred dollars or so.

It will be noticed that the adjustments nearly cate those of the ordinary large-size hand c This is necessary for good work, and the leve other makeshifts placed on small cameras by manufacturers prevent such cameras being a by the serious worker who has become accus to the large size.

I am aware that some one or two of these are now embodied in cameras manufactu foreign countries, but to my knowledge no has them all; in fact, one or two are origina myself. I hope to see a camera like this in es respects placed on the market in the near fut one of our American manufacturers. — Herb McKay, Eustis, Florida.

OTHER ANSWERS

Mr. Ruppel's answer naturally comes nex

A few prefatory remarks are necessary to clear just why the writer desires the type of described.

We have heard much in photographic litera late years of the merits of the small camera as c to the large and cumbersome types of appar

The advocates of the small camera have a case today, which was not true twenty-five ye

The use of the small camera presupposes ment of the negative and this is thoroughly today, due to the remarkable perfection atta the plate and paper makers in manufacturin sions of exquisite gradation properties and ab the "grain" so noticeable in the plates and b papers of the distant past.

In those days an enlargement was palpabl largement, but chloride enlargements of the b today are not to be distinguished from contac

However, the camera builders seem to be by the notion that to secure a first-class 8 x one must employ an 8 x 10 camera and plate

Why can we not have say a 3¼ x 4¼ cam bodying the following features of construct abling one to use the same for all kinds of sen difficult photography? Specifications as foll

All metal construction of Dowmetal or light and tough magnesium-aluminum alloy.

All working parts to be as finely fitted, m and smooth in operation as a good mic mounting. Am the owner of four cam Continental and American build of the best ty tainable, but know of no apparatus made ar that meets the exacting workmanship here de

Long bellows extension to render the came able for copying, floral and mineralogical raphy.

Vertical and lateral swing back of the re type. Swings to be rack and pinion actuat possible, by means of worm gear.

Generous rising and falling front similarly ac

Sliding front or, as it is called by our Englis ins, the "crossfront" to be movable at least the length of the plate and to be worm-ac This is a movement of the highest import close-up work, allowing rapid adjustment of the lens in perfect perpendicular to the subject.

Swing front to be rack and pinion or preferably worm-actuated. In architectural photography it frequently occurs that a moderate swing back is not sufficient and in this event a swing front is of the greatest usefulness.

Removable lens panel large enough to accommodate oversize and ultra-rapid anastigmat lenses. Should be broad enough to allow the proper separation of a pair of small stereo lenses to enable this camera to be used for the beautiful 45 x 107 mm. stereo photography. The camera should have a roller curtain septum for this work.

Drop bed for wide angle work employing one of the small stereo lenses. In brief, what is here demanded is a miniature metal camera embodying all the movements found only in the highest types of English whole-plate view cameras and being of superlative workmanship, fully equal in precision to that of the lenses and shutters with which it would be equipped.

As an accessory to this camera one should be able to purchase a finely-made enlarging apparatus consisting of tracks, housing with condensors and filament illuminant and equipped with negative carriers of the best type allowing the use of the camera for printing by projection, which I have some to regard as the finest and most versatile method of printing one can employ.

I find no camera made here or in Europe embodying the above features, all of which are necessary to all-around work of the highest technical excellence.

A prominent commercial photographer of my acquaintance tells me that were such a camera procurable it would be used considerably in his practice.

I am now forced to tote around a bulky, wooden 5 x 7 view camera, the very best I could buy, but which leaves much to be desired from the standpoint of smooth operation, rigidity, etc., and at that s lacking in some of the movements I have asked for n the above.

The old saw that "a good workman never complains of his tools" is, like many other old saws, only half-truth.

The master workman gives a great deal of thought o his tools and demands that they be of such excelence that he is not hampered in the least in their se but can concentrate his entire attention on the ork in hand.

A small camera constructed as above suggested nd embodying the precise and exquisite workmanip I have demanded would of course not be cheap. hy should it be? In modern technology we pay ttle attention to the initial cost of a piece of apparas but demand that it shall function with the highest tainable perfection. Not "How much did it st?" but "What can you do with it?" is the modern chnician's query.

We pay as much as a thousand dollars for a fine icroscope. The half of that should buy this ideal iniature camera.

Like a fine microscope it would be treasured by owner and would acquire the patina that comes h long and loving use.:— FREDERICK C. RUPPEL.

The next two answers are included, despite repetin, because they suggest that a camera of the same eral lines in the 3¼ x 4¼ size has a wider appeal n might be gathered by some from the answers earing above. After all, is a metal box essential? ooden box would mean a trifle larger size, but the first cost in manufacturing would be considerably lessened. These two readers do not specify metal:

Your November question excites my interest. For two or three years, I have been looking for a 3¼ x 4¼ camera with reversing and swing back, rising front, double extension or longer bellows, taking plate-holders of the Premo type, with spring-actuated ground glass frame. (I have no use for the models on which it is necessary to remove the ground glass before inserting holder.) The extension bed-plate and front to be wide and rigid, and lens-board easily removable. The optical equipment would consist of one or more reliable between-lens shutters, and set of lenses such as Protars, for instance; also a telephoto lens, and set of filters.

Having given up hope of being able to purchase such an outfit, I have started to make one for myself and hope to have it in commission by Spring. — ALLEN R. GREENLEAF.

I have searched in vain for *my* ideal camera. I've dictated dozens of letters to manufacturers, dealers, and supply houses. I've even peered hopefully into the windows of every Uncle Ike store in this old town. In despair I have surrendered to the immutable laws of camera architects and am now thoroughly resigned to amble on down the lane of life with my decrepit 3A.

Why in the name of optics does not some enterprising designer build a 3¼ x 4¼ plate camera with double extension, rack and pinion, rising and falling front, and reversible back? A really efficient instrument with a front designed to carry an anastigmat lens *f*:4.5 equipped with a shutter capable of handling *all* the speed of this type of lens. The focal plane cameras have some of these adjustments, but the average amateur, owning only one camera, would hardly prefer this aristocrat, and so far as I have learned none of the other cameras in this size have the adjustments.

To my mind the 3¼ x 4¼ fills the gap between the too-small miniatures and the too-big 4 x 5. The rectangular picture is symmetrical. It is ideal for enlarging, is light enough for extensive field work and heavy enough for such home portraiture, copying, and short range work as is likely to come within the scope of the amateur. I used the 3¼ x 5½ size for a year and then after mulling over three or four gross of accumulated negatives found that I had bought, carried, developed and hypoed an inch of useless glass in ninety-seven per cent of my exposures. The reason. Nearly every picture came within the boundaries of 3¼ x 4¼. Figure it out for yourself: Focus on your house some day with the postcard size and see the inch strip of waste glass on one end of the ground glass, or try to compose an average landscape. It may look right on the screen, but you'll guillotine the print eventually. Copy something — anything — and see the blank end on the negative. Occasionally a close-up still life or floral study makes up nicely in the panel, but the general run of compositions do not lend themselves to that form.

I have overcome the difficulty to some extent by converting my postcard size to handle the 3¼ x 4¼ plate. Some stiff cardboard, some cigar-box wood, and glue made over my plate holders to take — and hold — plates of the 3¼ x 4¼ size. I have overcome the expense and wicked wastage of perfectly good glass, but I still have to rebel against the extra burden of camera and accessories.

If anyone knows of an American-made camera with the adjustments described above, or if anyone who can be hired, scared, bribed or bullied into building one, he will confer an everlasting favor by writing me at my expense. — **Frank B. Odell.**

Most of the other answers are too long to include in full, but a digest will be of interest.

William J. Connell "lifts his voice in prayer" for a 3¼ x 4¼ view camera with 20-inch draw, of fine workmanship, and with all the conveniences of the best large view cameras.

Isoji Nakajima urges a camera like the No. 12 Premo with 3½ inch *f*:4.5 lens, but equipped with a front allowing ample movements horizontally and vertically and with the means of focusing as near as three feet.

This brings up the question as to why movable fronts are not more generally supplied on miniature cameras. The answer is that while this feature is desired and appreciated by a limited few, it generally makes trouble for the manufacturer if the camera is extensively sold, for the majority of users are careless, or perhaps we should say inexpert, and at some time manage to jam the camera by attempting to close it without seeing that the front is in center position. This throws things out of alignment, if it does nothing worse, and the camera ceases to function with precision. Curses and complaints ensue, and the camera is pronounced "no good." If no movable front is provided, such difficulties are forestalled, although users here and there are deprived of a feature which they really want. We do not know that the explanation here given accounts for the omission of the movable front from the Premo No. 12, but it accounts for other instances of a similar nature. A "Special" model with the movable front would not be a bad innovation.

A number of readers called for lenses of longer focus in cameras of present prevailing types. This demand is more or less recurrent. There is, however, a manufacturing difficulty. Long-focus lenses are big lenses and require bigger shutters, also longer bellows draw. This requires that the camera be made bigger to accommodate such features. If long focus for a small camera is regarded as essential, the only practical solution is the provision of a convertible lens which with the combined elements is of the usual focus while its separate elements gives longer focus but at *a small effective aperture.*

Charles A. Young calls for a box camera of the focusing type, with high speed lens and shutter, to take a 2¼ x 3¼ picture. This type of camera preceded the present folding camera, with the exception that high speed lenses had not then come into use. The possibility that it will be revived by any manufacturer is microscopic.

A good many readers seem to be interested in the 1⅝ x 2½ inch size. Numerous modifications in current models are suggested. A very good one is that in focusing models the camera be so constructed that when opened the lens will be fixed for the 25-foot distance, which will assure good definition for average views.

More interest is shown, however, in the 2¼ x 3¼ size, the demand being for a plate camera with fast lens, of as long focus as possible, with rack and pinion focusing, and in one or two instances swing back and swing bed, besides movable front. After weighing the contentions of the various advocates, we should judge that a miniature camera along these lines with double-extension bellows and a small convertible anastigmat would have an extensive vogue. Such a lens complete would have say a 3½ inch focus, with largest aperture say *f*:5.6 or *f*:4.5, this for average photographing and snapshots, with which a fairly wide angle gives a desirable margin of safety, while for tripod work, with which speed is not a factor, the slower separate elements would give focal lengths of say 5 and 6½ inches.

A few readers express a desire for an improved stereo camera, and two offered specifications for a modified reflecting camera.

With the following answer we shall have to close the symposium:

There is a type of camera which I have wished for many times. It would use the regulation moving picture film, 100 to 200 feet capacity, have circular revolving mirror shutter set at 45 degree angle same as a Graflex, with suitable hood or eye-piece having necessary magnification arrangement. Mechanism to be operated by spring and adaptable to single pictures or continuous from three to fifteen or twenty feet. Really a Graflex movie-cut-short. I think such a camera would be very useful in child study and in making movies for the home. There are many other uses to which such a camera would be adaptable. Possibly a steadying tripod of some sort would be necessary to secure best results. A camera of this type would surely hasten along the time when the movie will be in the home, by being less expensive and by insuring the necessary personal interest. — **R. T. Morris.**

FEBRUARY QUESTION FOR READERS

Why does a portrait attachment give a larger image, and what bearing does the answer have upon its effective use?

For the best answer to this question received by March 15 a credit of $2.00 towards books of our publication will be awarded. Address the Question Box Editor, and write any other communication on a separate sheet of paper.

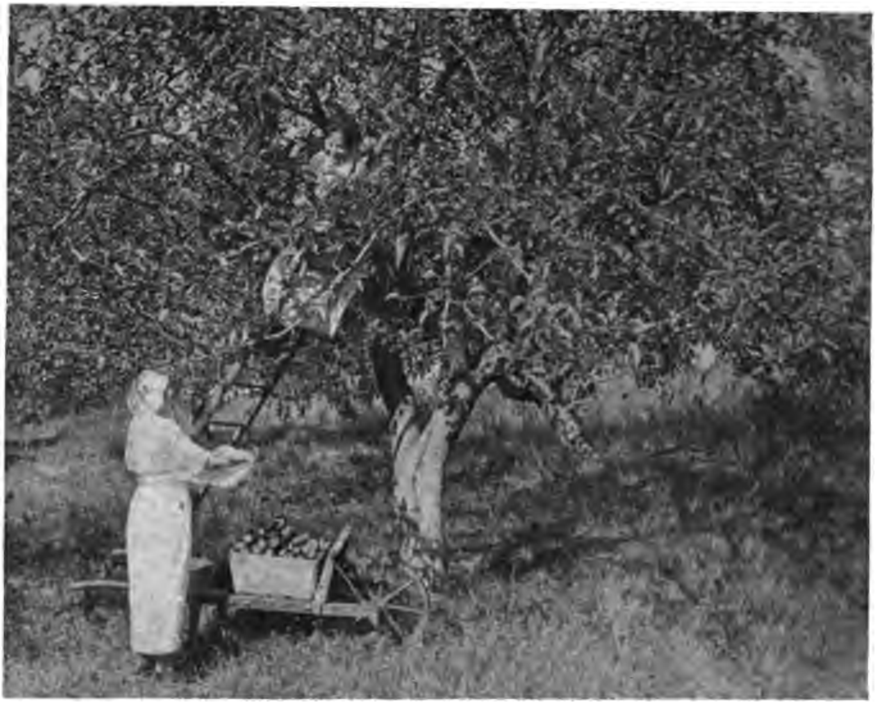
READERS' CRITICISMS

BEST CRITICISM OF PRINT NO. 23

Foreword — No one criticism seemed to cover the case completely, but the following by Mr. Kunkel struck us as on the whole the best. The other criticisms and excerpts from criticisms here published serve to supplement it effectively. The best criticism:

One immediately finds fault with this print because of its obvious relationship to that large family of amateur prints which are identified in photographic vernacular as "record snapshots." (Not a serious objection; record pictures are not beyond the pale. — *Criticism Ed.*)

The print is too flat. Everything within the picture space appears plastered on the surface plane and suffering with "tessaritis" — minute detail rendered to the very corners. This and the mottled grey tone give the print a disagreeable wall-paper appearance. The wrong viewpoint and the wrong lighting to produce the illusion of depth and relief were adopted.



Criticism Print No. 23

The photographer must have been obsessed with the idea of getting all of the tree in the picture; otherwise he would have made a vertical and avoided much extraneous matter. As it is, he has produced a good example of what I prefer to call the umbrella style of composition — a tree in the center with an overpowering mass of foliage in the upper half of he picture.

There is nothing of interest to the right of the ree trunk, which part should be trimmed to within ıalf an inch of the trunk. Trimming about one-ourth of an inch from the left also makes an improvement. There is not sufficient foreground to ccommodate the standing figure, and the one in the ree is most to low in the branches to be effective.

The figures are interesting. The wheelbarrow oad of apples is well placed, and fitting pictorial naterial. The highlight on the tree completes the riangular composition, disclosing the picture. If ve now imagine the suggested improvements, the esult is a rather interesting genre, reminiscent of he apple-picking days of autumn. — Wm. R. UNKEL.

FROM OTHER CRITICISMS

There is also present the element of human interest, ften so hard to get because it is difficult to find subcts who are willing to act as models. The pose of ıe figures is excellent and shows no consciousness f the camera. They are evidently interested in athering apples and seem to be enjoying it.

In the November number of *The American Maga-ne* Mr. Underwood, president of the firm of Under-ood and Underwood, says that the four things which ıe public most wants to see in a photograph are cheerfulness, personality, action, and novelty. This picture might be said to contain them all; certainly cheerfulness and action are present to a large degree. Perhaps Mr. Underwood would purchase one of these prints.

There is but one thing which seems open to criticism in this picture, and that is the maker, in trying to get the larger part of the tree into the view, has overlooked the important matter of balance and has placed most of his objects of interest at the left. Fortunately, this can be corrected very nicely by a liberal trimming from the right, and then just a little, say a quarter of an inch, from the left to make a pleasing vertical shape. — James F. Bennett.

This picture is overexposed and flat and too monotonous, has too much of a sameness at the top, not enough contrast between light and dark.

Since the point of interest is perpendicular, the picture would be greatly improved by trimming one-third off the right side, thus making a picture of greater length than breadth and at the same time taking the tree from the exact center of the picture. Lida Robb.

No effect of distance. Picture all in one plane.

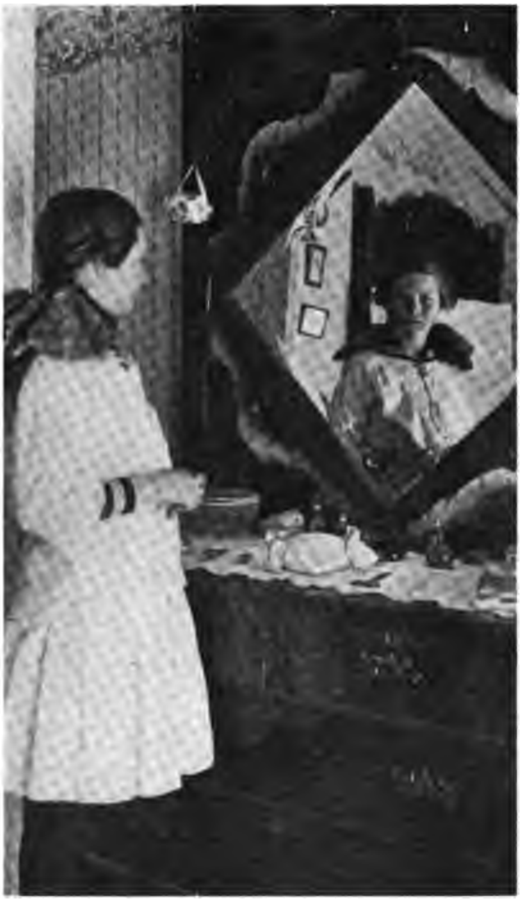
One or one and a half inches trimmed from right would bring tree more to right and improve general effect, and perhaps add to effect of distance.

A trifle larger opening and faster timing would improve general effect and add to perspective.

No telling which way ladder leans. Bottom of ladder showing more plainly would help.

Do not like position of wheelbarrow. No woman could throw an apple without hitting wheelbarrow and bruising the apple. — James S. Loomis.

Would it not be better to have the sunlight shining just in the opposite direction? That would give



New Criticism Print No. 26

modeling to the tree and figures without so much flatness, and shadows would lead the eye into the picture instead of out at the right as at present. — M. M Bremon. (One cannot always regulate the direction of the sunlight to suit his wishes. Also, a back lighting with this subject might present difficulties. Yet this and other criticisms indicate the need to take precautions against flatness of rendering where a flat lighting is present. In such cases, especial care should be taken to avoid over-exposure, and a paper should be selected which gives suitable register in the shadow end of the scale. — *Criticism Ed.*)

The points of interest (two faces looking at each other) are connected both by line and abstract interest very successfully. A little larger opening of the diaphragm would have produced a more pleasing softness of the immediate foreground, thus drawing and adding a little more direct attention to the action by differentiated focus. — L. B. Leeds.

Here is a typical and pleasing outdoor genre with a good range of tones and an effective balance. The triangular arrangement provides the sense of stability but it would have been strengthened still more had the wheelbarrow been placed farther to the right just beyond the tree trunk.

The two young ladies appear to be enjoying themselves thoroughly, their positions suggesting nothing of an attempt at *pose*.

The luminous shadows cast by the tree form a very pleasing pattern.

I wonder if the apparent flatness in lighting could be remedied any in printing; or is it a result of the usual loss in reproduction?

My only other suggestion for improvement is the trimming of a half inch from the right. — George A. Beane, Jr.

Obviously, the print was intended to be a mere record and not a picture of any pictorial qualities. Conceding that point, we will discuss it upon that basis. It could be called, however, a bit of genre.

Its fate was almost sealed when the curtain jumped — yes, burnt up, with the inevitable result of flatness, poor tone rendering, lack of details in the highlights, and chalky whites. And to add to the same end, the maker selected a poor time of day to expose the plate. From the shadows, as well as the data, it can be seen that it was made within two hours of noon, when the shadows are fairly short and not nearly so interesting as those that fall one and a half or two hours later. Light falling from a vertical or nearly vertical angle tends to produce flatness "as though there were no depth to it, as though it were a simple outline projection on a sheet of paper, with no shading added."

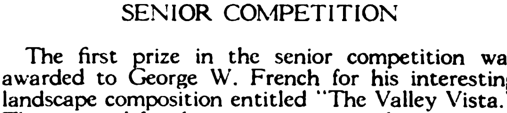
Practically, one half of the picture needs the scissors. It is absolutely bare of interest and hangs as a dead weight, placing a monotony upon the picture that is impossible for the eye to get around. Briefly, it destroys the balance.

Trim two inches from the right and — presto! — we have quite a nice picture.

As to the subject, it is really interesting and tells a splendid story of the apple orchard. — William E. Barr.

NEW CRITICISM PRINT NO. 26

Readers' Criticism Print No. 26 was made in Pennsylvania in bright February light with a 3A Ansco Speedex — other data not furnished. For the best criticism of this print received by March 15 a credit of $2.00 towards books of our publication will be awarded. Criticisms are invited from all readers, whether subscribers or not. Address the Readers' Criticism Editor, and please write on one side of the paper only.



OUR COMPETITIONS

SENIOR COMPETITION

The first prize in the senior competition was awarded to George W. French for his interesting landscape composition entitled "The Valley Vista." The material for this picture is certainly not inspiring, consisting mainly of a bald frame building and a shed by the side of a road. Little help is given from the distant hillside, which is veiled in mist. The attractive sky, however, and the framing of the picture in the pleasing shadow masses of the two trees, make the picture. The strong light on the roofs furnishes a desirable accent and the shadowed road an interesting inlet into the picture. Made in Ashuelot, N. H., with a 3¼ x 4¼ Graflex fitted with a 6-inch Velostigmat III. The exposure, at 7.30 P. M. in dim sunlight late in August, was 1-25 second at f:6.3. The Premo film was developed in M. Q. and enlarged on Artura Carbon Black. Page 77.

The second prize was awarded to L. A. Morse for "A Wanderer," which owes its charm mainly to the great skill displayed in lighting the composition. In this picture, as in the previous one, we have a diversified framework of foliage surrounding the central portion containing the principal object. Here however, the frame is mainly light against a darker background, and from this background the figure stands forth brilliantly. The spacing is very attractive and the contrasts of light and shade very pleasing. Made in Central Park, New York City, with a 4 x 5 Corona Camera fitted with a 9½-inch Verito lens. The exposure was 2 seconds at f:4.5 with a K-3 filter in good light at 9.30 A. M. in September. The Standard Orthonon plate was tanked in pyro and enlarged on Artura Carbon Black. Page 81.

Third prize was awarded to Sotaro Saba for "A Bright Day After Rain," a very pleasing genre composition. The landscape arrangement is perhaps as important as the figure, for the bottom of the print, containing the figure only, would be little more than a not especially characteristic record. Trimming in the form of an upright panel, however, gives a totally different impression, for it makes the figure a part of the strange and interesting whole, which mpresses us as something quite different from our own home surroundings. Made in Japan with a half-plate stand camera fitted with a 7-inch No. 2a Collinear lens. The exposure in bright light at .45 A. M. in September was 1-15 second at f:5.4. The Ilford Screened plate was tanked in pyro-soda and enlarged on Eastman Portrait Bromide. Page 3.

An additional third prize was awarded to Oliver . Young for "In Port," an interesting marine study which once again illustrates what an attractive oreground is often made by gently moving water. n a reflection of this kind the stronger lines survive, while many of the weaker disappear, thus materially mplifying the composition. The line arrangement ere is very picturesque. Made in Maine with an nsco Vest Pocket No. 2, fitted with 3½ inch Ansco nastigmat. The exposure in bright light at 3 P. M. n October was 1-10 second at f:6.3 with a 5-times ter. The Eastman Speed film was tanked in yro and enlarged with a Verito lens on Buff Portait Bromide. Page 91.

Honorable Mentions were awarded as follows: —

Norwegian Fjord	Walter L. Bogert
xteen	F. E. Bronson
he Brook in Winter	John N. Consdorf
utdoor Portrait — Miss P	J. H. Field
hree Stages of Indian Pipe Growth	Harold B. Neal
inter	Wm. J. Wilson
Study	Elizabeth B. Wotkyns

Commendations were awarded as follows: —

over's Lane	Harry Beeler, Jr.
Horse Shoe of the Rockies	Albert Bilodeau, Jr.
arion	D. J. Broderick
nuary Mist	Paul W. Bufler
e Swinging Bridge	F. D. Burt
rtrait of a Boy	Fred E. Crum
Portrait	C. F. Dieckman
Sally on the Farm	Louis A. Dyar
Portrait of a Boy	R. M. Hart
Fire Fighters	J. K. Hodges
Grandfathers' Writing Table	E. E. Jones
An Outdoor Portrait	Walter Rutherford
The Wayfarer	J. Herbert Saunders
The Brook	Reuben Schwartzberg
The First Snowfall	Bruce Sifford
A Northern Sunset	J. A. Singler
A Rift of Gold	Kenneth D. Smith
Sour Grapes	B. M. Whitlock

JUNIOR COMPETITIONS

The first prize in the junior competition was awarded to "Leonta H." by H. E. Horrigan, a very charming and characteristic child portrait. The black background brings out very strongly the features which the maker evidently desired to accentuate. At the same time the lights on the furs and the hat are sufficiently strong to adequately indicate the quality and the contours. Possibly the button on the coat should have been somewhat lowered in tone. Made with an 8 x 10 Century camera fitted with 14-inch Wollensak Series A lens. The exposure at noon in November, outdoors in sunlight, was 1 second at f:5. The Seed 30 plate was developed in pyro and printed on Artura Iris, Grade E. Page 99.

The second prize was awarded to "The Old Castle," by J. Sitek. This is an interesting old-world architectural study, picturesque both in subject and in treatment. Made in St. Flour, France, with a 6½ x 9 cm Gaumont Block Notes M. P., fitted with 112 mm Krauss Tessar lens. The exposure at 5 P. M. in July, in bright light, was 1-25 second at f:4.5 with a 2-times filter. The Wellington Anti-screen plate was tanked in pyro and printed from an enlarged negative on Fresson gum-bichromate paper. Page 79.

Honorable Mentions were awarded as follows: —

Portrait of Mrs. "S"	Ralph B. Bonwit
The Closing of a Dreary Day	G. H. Graves
Getting his Number	T. F. Griffin
Bubbling	Jiro Ito
A Silvery Night	Stephen J. Palickar
A Puzzling Job	E. H. Smith

Commendations were awarded as follows: —

Portrait	Edmondo Agostini
A November Landscape	Carl F. Alm
Wading	E. M. Ball
White Chrysanthemums	Wm. E. Barr
Camp Days	A. L. Belasco
The Line Up	Geo. Bender
An Early Start	Erik A. Berg
A Young Enthusiast	H. J. Brennan
Three of a Kind	E. J. Browne
The Light Breeze	W. H. C. Carriere
Toyland	J. L. Clyburn
The Morning after the Snow	Richard Crawford
Landscape—Mirror Lake	Robert E. DeLand
Look-Out Station	E. B. Du Bridge
Jonquils	Jas. V. Dunham
My Cat	G. R. Dyment
A Quiet Spot	Chester Demaree
Snooks	M. J. Eitel
A Summer Day	John A. Elkins
The Lure of the Road	A. A. Emrick
Her First Trip	B. D. Hamilton
The Fisherman	Roy Harsin
Teddy	Willard H. Harting
Sunset	Jack Hatchel
Birds	L. L. Herr

Us Ducks	F. A. Hasse
The River Bank	Mrs. Helen E. Hawley
Teton Mts.	Jas. B. Hays
Fascinating Lake George	Irving Hertz
The Shady Pool	Thos. C. Higgins
November	Walter E. Howe
The Gorge	Garnet E. Jacques
The Brook	Lawrence V. Jolliffe
The Old Creamery	W. Keibel
Village	Monroe G. Kelley
Tired, but Happy	Emanuel Kober
Scouting	W. W. Kuntz
Peacefulness	Gerard H. Lafontaine
S. S. Nile	Th. L. Lim
Christmas Weather	H. J. Mahlenbrock
Sun Rays	Ralph L. Markle
The Outskirts of a Village	Yuzo Mitani
Baby	Frank Mlnarik
The Old Willow	Hannah G. Myrick, M. D.
Lure of Jazz	Wm. B. Paris
Soft Maples in Nov. Sunlight	Paul Richardson
Guard of the Trail	W. H. Roberts
Down the Trail	Howard K. Rowe
Leper Colony	Lim Bee Shu
The Sentinel	Ernest A. Shuster, Jr.
Wanted! A Little Love	Dan O. Smith
Miss Z	Ivan Sokoloff
Laughing Boy	Chou Su Tau
The Silent Sentinel	Edwin S. Willard
St. Johns, N. Y.	J. C. Youens

ROLL OF HONOR

FIRST PRIZE

J. H. Field 8

SECOND PRIZE

Geo. W. French 8
H. B. Rudolph 7
Alexander Murray 6
Kenneth D. Smith 6

THIRD PRIZE

J. Herbert Saunders 8
F. D. Burt 6
Jared Gardner 6
Wm. J. Wilson 6
W. R. Bradford 5

HONORABLE MENTION, SENIOR CLASS

Gustav Glueckert 11
Louis A. Dyar 10
A. F. France 10
W. Kitchen 10
Sotaro Saba 10
Fred E. Crum 9
Ira T. Bronson 8
Lawrence Baker 7
Edwin B. Collins 7
Herbert J. Harper 7
Carrol B. Neblette 6
Juventino Ocampo 6
Clark H. Rutter 6
Oliver P. Young 6
Louis R. Murray 5
Robert P. Nute 5
Fred R. Raven 5
Walter Rutherford 5
Elizabeth B. Wotkyns 5

COMMENDATION, SENIOR CLASS

Walter L. Bogert 31
Chas. D. Meservey 21
James Thomson 19
C. B. Weed 19
Walter R. Henry 15
F. A. Northrup 15
Walter Rutherford 12
C. M. Harris 10
Dr. E. L. C. McGinnis 10
Arthur Palme 10
Gus Schinkel 10
E. W. Quigley 8
J. A. Singler 9
H. K. Armura 8
J. K. Hodges 8
Frank King 8
Leo Kraft 8
L. A. Morse 8
H. B. Neal 8
Herman D. Warren 8
F. E. Bronson 7
E. E. Jones 7
B. M. Whitlock 7
Wm. S. Davis 6
Dr. L. Broe 5
Stephen J. Bushya 5
Victor D. Elmere 5
R. M. Hart 5
M. L. Shattuck 5
Arthur H. Travers 5
W. H. Waite 5

HONORABLE MENTION, JUNIOR CLASS

H. Bowly 5
J. Ito 5
Joseph F. Westgate 5

COMMENDATION, JUNIOR CLASS

F. H. Chant 20
W. Keibel 20
John Ziemanski 20
Garnet E. Jacques 17
Edwards H. Smith 17
Harvey C. Pendery 16
Howard E. Louis 15
Paul Richardson 14
P. F. Squier 14
L. Archambault 13
Geo. A. Beane, Jr. 13
Talbot Richardson 12
J. F. Webster 12
H. J. Brennan 11
John N. Consdorf 11
W. W. Kuntz 11
John Paton, Jr. 11
Howard K. Rowe 11
Wm. E. Barr 10
P. A. Cazaubon 10
Oliver Frantz 10
Stephen E. Isaac 10
J. W. Jeffers 10
Wm. Ludlum 10
H. J. Mahlenbrock 10
Alfred S. Upton 10
John A. Elkins 9
Simon Jochamowitz 9
Irving S. Lovegrove 8
M. W. Osterweis 9
Ivan Sokoloff 9
A. S. Workman 9
Marjorie Chater 8
Chester Demaree 8
Jas. V. Dunham 8
Edwin A. Falk 8
J. R. Frow 8
John P. Geertz 8
Geo. S. Matthews 8
A. C. Norton 8
Juan St. Cere 8
B. F. Willard 8
John H. D. Blanke 7
A. W. Crawford 7
Robt. E. DeLand 7
R. W. Garwood 7
C. V. Hewitt 7
V. Rose Huff 7
Rex G. Mattice 7
Stephen J. Palickar 7
G. A. Smith 7
E. J. Williams 7
Walter P. Bruning 6
Geo. F. Hogan 6
I. Komaniya 6
Wm. T. McGrath 6
Mary E. Benham 5
E. J. Browne 5
J. L. Clyburn 5
Herbert L. Douglas 5
Willard G. Harting 5
Geo. L. Heath 5
John Janson 5
Hannah G. Myrick, M. D. 5
Harry G. Pearce 5
Dr. C. W. Pratt 5
Edwin A. Roberts 5
Ford E. Samuel 5
A. M. Tomlinson 5
John Tornello 5

OUR ILLUSTRATIONS

FRANK ROY FRAPRIE

The portrait of Doris Kenyon by Ned Van Buren, from the Members' Exhibition of the New York Camera Club, is a charming example of youthful freshness and grace combined with excellent photographic technic and straightforward photography. There are no tricks or artifices apparent in this picture. Though the hat is large, the whole of it is included within the picture frame, and yet the space is well filled and the figure preserves its proper relation to the space within which it is enclosed. Page 71.

"Portrait," by Nickolas Muray, reminds one of some of those simple but severe flat-toned portraits which have come down to us from the Italian masters. The cast of countenance, the simple line of the dress, the straight black hair with the simple part, all further this resemblance. The picture is interesting and well executed. Page 73.

"The Stone Age," by L. M. A. Roy, is a very interesting allegorical composition. The suggestion of the antediluvian worker carving with rude tools his message to posterity on a tablet of stone is well thought out and well executed. Made in La Crosse, Wisconsin, with a 6½ x 8½ view camera equipped with 15-inch Smith semi-achromatic lens. The exposure at 3 P. M. in July was 20 seconds at *f*:8, by the light from a single small window. The Hammer Blue Label plate was developed in Rodinal and printed on Angelo Smooth Sepia Platinum. Page 75.

"The Swimming Hole," by J. G. Sarvent, depicts with truth to nature and most pleasing composition one of the most alluring joys of childhood. It is unnecessary to pose such a picture, which can be found in every creek in the land, and when a joyous party is discovered, a few minutes waiting will give numerous opportunities for an interesting composition. This was made in a suburb of Kansas City with a 4 x 5 R. B. Graflex fitted with an 8½ inch Turner-Reich lens. The exposure in bright light, on a summer's afternoon, was 1-10 second at *f*:8. The Standard Orthonon plate was developed in pyro and enlarged with a Darlot single lens on Artura Carbon Black. Page 78.

It would be needless to suggest to the enlightened readers of AMERICAN PHOTOGRAPHY that the elaborate article of Messrs. Clendenin and Connell on "Feline Photography" is a skit on a kit. Even though they laugh at the article, however, and conclude that its pretentious directions are impractical in practice, they can but admit that the authors have well pictured some very elusive subjects, for our own estimation is that it is about a hundred times as difficult to photograph a cat as a dog. Pages 84, 85.

"A Morning Stroll," by L. A. Olsen, is ethereal in its delicacy and daintiness. The treatment, with its deep shadows filled by the concealing mist, is well adapted to bring out the charming delicacy of the subject, strongly emphasized by the *contre jour* lighting. Made near Salt Lake City with a 4 x 5 Corona camera fitted with a 9-inch Smith semi-achromatic lens. The exposure, at 10 A. M. in July in bright light was 1-5 second at *f*:6. The Premo film pack was tanked in pyro and enlarged on Artura Carbon Black. Page 87.

"The Snowy Path," by Edwin B. Collins, is a pleasing and simple composition. The delicate tracery of the path across the foreground and through the picture leads very satisfactorily to the group of houses, which forms the principal emphasis. Made in Des Moines, Iowa, with a No. 1a Special Kodak fitted with a Kodak anastigmat. The exposure, at 4 P. M. in December in bright sunight, was 1-10 second at *f*:6.3. with a 2-times filter. The Eastman Speed film was tanked in pyro and enlarged on Artura Carbon Black. Page 93.

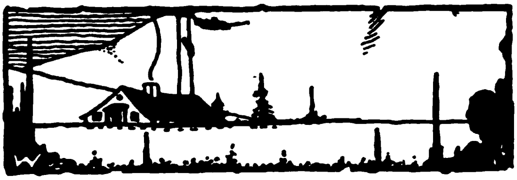
The snow print on page 97, "Furna" by D. Mischol, comes from far-away Switzerland. The composition is very similar to that in Mr. Collins' print on page 93, being a path leading through trees to a building, but here we have a picture of great boldness and the illusion of a hill well preserved, a most difficult feat to achieve. The contrasts are slightly xaggerated in reproduction. Made with an 18 x 4 cm Perfect camera equipped with 11-inch Euryplan lens. The exposure in sunlight at 9 A. M. in February, was 1-10 second at *f*:12 with a 2-times lter. The Ilford plate was developed in Rodinal nd printed on Griffin's Bromoil.

"The Bulrushes," by James Wallace Pondelicek, s a charming example of the characteristic figure hotography of this artist. His work is always ttractively posed and placed in pleasing surroundings. Made with an 8 x 10 view camera fitted ith a Smith semi-achromatic lens of 18 inches' focal length. The exposure at 11 A. M. in August in bright sunlight, was ½ second with a K-2 and a K-3 filter. The Standard Orthonon plate was developed in pyro and printed on Cyko Linen Buff. Page 101.

"Portrait," by Louis Astrella, is not it seems to us, an entirely adequate representation of the character of the individual portrayed, for the overshadowing gloom spread on his countenance is an artifice of the photographer rather than a characteristic of the subject. In other words, the portrait, though a faithful presentment, is in our opinion, printed a trifle too dark. Aside from this it is a pleasing piece of portraiture. Page 103.

"Pierrot Forlorn," by Arthur F. Kales, takes the editor back to his youthful days in Munich, when all through the period from Twelfth Night to Ash Wednesday masked balls and carnival routs were the principal events in life, interspersed with the less interesting trivialities of study in the chemical laboratory. In those days Pierrot was a familiar figure and was to be seen in dozens or hundreds on every Wednesday or Saturday night. The posture is characteristic, for he is always dancing attendance on some fair Columbine who scorns his suit, and being a whimsical creature, he delights to pose statuesquely, as here. Cheer up, Pierrot, your grief is but short, for Columbine always is gracious in the end. Page 105.

"The Benediction of Night" by F. Bauer, tells its own tale. It excites no criticism for it fully and perfectly achieves its maker's intent. Page 107.



NOTES AND NEWS

THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC, 1922. New York, George Murphy, Inc. 57 East 9th Street. Paper covers $1.00, cloth $1.50.

Though not displaying the bulk of pre-war days when this hardy annual was almost too cumbersome to handle with comfort, the current issue provides an abundance of interesting reading matter not only on the 325 pages in the center of the book that contain the usual articles, reviews, directories and an epitome of progress, but also on the 500 pages of advertising at the beginning and end of the volume. The leading article, written by the editor, George E. Brown, deals with the unusual and extremely interesting topic of "Self Instruction in Photography" in which are described a number of simple but practical chemical experiments by means of which the manufacture and use of photographic materials will be thoroughly understood. This is followed by the Obituary for the year in which we find, among others, the names of William H. Rau of Philadelphia, Ludwig Hammer and Fayette J. Clute. The Epitome of Progress contains some very interesting items. This is followed by the usual formulae, miscellaneous information, weights and measures and other useful information. There is a complete index to the text and to the advertisers and a directory of the photographic trade in the British Isles. This should be included in the library of every practical photographic enthusiast.

Annuario Della Fotografia Artistica, 1921. Il Corriere Fotograficio, Milano, Viale Magenta, 12.

Even those who are not able to read the Italian text would find this a most interesting volume by reason of the illustrations. Five of these are real photographs printed on various grades of Gevaert papers and a small picture, about 3¼ x 4¼, printed on a page 7½ x 10½ makes a good looking page. There are over fifty very fine halftones, and many articles in Italian, dealing with Artistic Photography in Italy, in France, in England, in Germany, in other parts of Europe, in the United States and Canada and in Australia during the year 1920.

* * * *

Die Bildnis-Photographie. By Fritz Loescher. Fifth Edition with 121 illustrations. Berlin. 1920. Union Deutsche Verlages Gesellschaft. Price $3.00.

Mr. Loescher's book on portrait photography is perhaps the standard work on this subject in German and has been through several editions. The present, which is carefully revised and almost entirely rewritten by Karl Weiss, who is the editor of several important German photographic magazines, is a most excellent text book for either amateurs or professionals who are familiar with the German language. The style is clear and simple and even those with a moderate acquaintance with German would find little difficulty in reading the book, for scientific German is easier to read than the literary forms.

* * * *

FLOYD VAIL'S ONE MAN SHOW

The Department of Photography of Brooklyn Institute of Arts and Sciences inaugurated its winter series of one man shows by an exhibition at its gallery in the Academy of Music, Brooklyn, of some sixty prints from the portfolio of Floyd Vail, F. R. P. S. As Mr. Vail has, in recent years, been more given to showing his prints abroad than to exhibiting them in this country, it is the first opportunity most people have had in some time to see much of the work of this eminent pictorialist who has been devoting so much of his energies of late to the presentation at the Camera Club, New York City, of the work of English artists of note. Mr. Vail's exhibition is a treat which has been enjoyed by goodly numbers of photographic enthusiasts of the Metropolitan District.

On entering the exhibition gallery the first impression one gets is a sense of the wonderful versatility of this gifted artist and of the feeling and delightful quality he gets in a bromide print.

No mood of nature escapes the lens of this facile workman, no hour of the day but finds him at his task, whether in sunshine or rain, or fog or winter's snow, and it matters not whether his footsteps stray over city streets or country roads, each place he goes furnishes him with a subject for a salon print.

That his work meets with the approval of competent judges may be gathered from the mere statement that almost every print in his exhibition bears at least one salon paster.

Portraits, landscapes, marines, street scenes, figure studies, architectural gems, genres, early morning, late evening, bright days, dark days, all are included in what must be regarded as one of the outstanding exhibitions of the year.

Mr. Vail's prints will go from Brooklyn to Washington, where they will be on exhibition for some time at the United States National Museum.

It is the first time that a pictorial one man show was ever given in this Government institution, or a photographer has been so honored, and none is more worthy of this great distinction.

* * * *

The Detroit Camera Club, having more than outgrown their present quarters, have been able to find more suitable rooms at 1304 East Jefferson Avenue, Detroit, Mich. There they have two large rooms on the first floor with a basement underneath which will contain four darkrooms, lockers, etc. They are glad to extend an invitation to any photographers passing through Detroit to make them a visit.

* * * *

At a meeting of the Associated Camera Clubs of America, the following named were elected to hold office until September 1923, or until their successors are elected —

Officers

President, Todd Hazen, Oregon C. C.; Vice-President, M. R. Witt, P. C. of Philadelphia; Secretary, L. F. Bucher, Newark C. C.; Treasurer, H. C. Brewster, Newark C. C.

Board of Directors

W. C. Mackintosh, Calif. C. C.; J. J. Ryan, Chicago C. C.; G. M. Miller, Capital C. C.; J. C. Stick, So. Calif. C. C.; W. R. Frisbie, New Haven C. C.; J. Lee Tormey, Photo. Club of Baltimore (by appointment of the board).

All the amendments proposed in letter of June 1st were approved. Please mark your constitution and by-laws accordingly. Annual dues three dollars ($3.00). Board of Trustees changed to Directors. A contributing membership with annual dues of $10.00. An Honorary President to be the Chief Executive of the United States. An initiation fee of five dollars ($5.00) on all applications presented on and after October 1st, 1921.

* * * *

The index for American Photography for 1921 is now ready and will be sent to any reader on request.

FORTHCOMING EXHIBITIONS

Place	Date	For information write to—
Pittsburgh Salon Closing date for entries February 16th, 1922	March 1st to March 31st, 1922	Mr. Charles K. Archer 1412 Carnegie Building Pittsburgh, Pa.
Pictorial Photographic Society of San Francisco, 1st Annual Salon of Photography	May 1922	H. A. Hussey, Salon Sec. 64 Pine Street, San Francisco, California
Portland Camera Club, Photographic Section of the Portland Society of Art. Annual Salon. Entries close Feb. 15th	March 3rd to April 2nd, 1922	O. P. T. Wish, Secretary Portland Society of Art Portland, Maine

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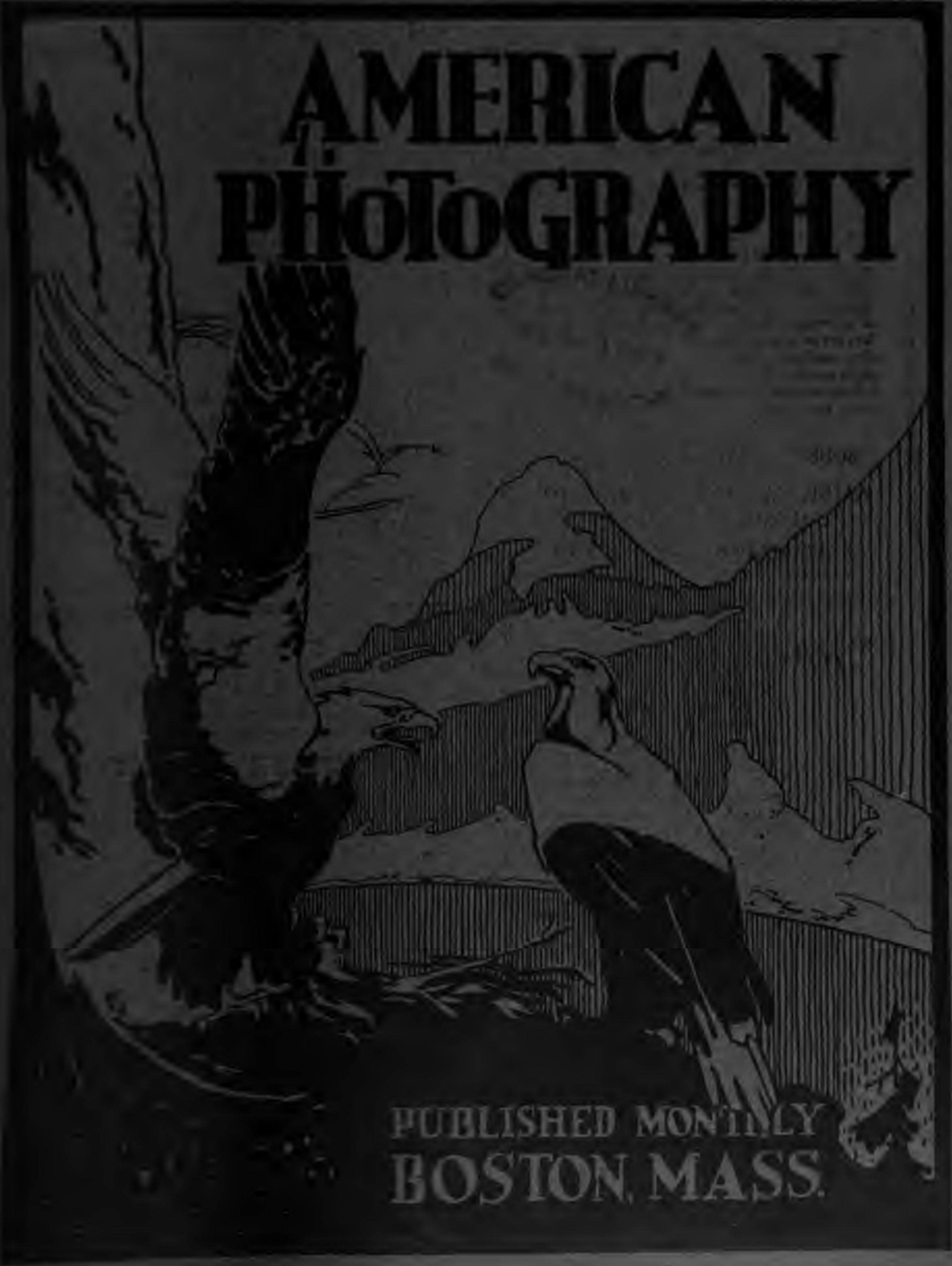

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AMERICAN PHOTOGRAPHY

VOL. XVI BOSTON, MASS., MARCH, 1922 No. 3

SULPHITES, METABISULPHITES AND ACID SULPHITE

E. J. WALL, F. C. S., F. R. P. S.

THE use of sodium sulphite as a preservative for developing solutions was suggested by H. B. Berkeley in 1882 (Phot. J., 1882, **22**, Brit. J. Phot., 1882, **29**, 47; Phot. News, 1882, **26**, 41) in conjunction with pyrogallol, and it has been generally adopted for the same purpose with all other developers. Its action is presumably due to the fact that it is readily oxidized to sulphate, though it is quite possible that some complex compounds are formed with the developing agents, which are less liable to oxidation than the pure agents themselves. There are practically three forms of sulphites used, which are more or less interchangeable, and the following note may be useful as showing the relation between them.

Sodium sulphite occurs in two forms, the anhydrous or desiccated, with the formula Na_2SO_3, and the crystalline variety, which has seven molecules of water of crystallization, and has therefore, the formula $Na_2SO_3.\ 7H_2O$. This latter form is more generally used in England and this fact should be borne in mind when dealing with formulas hailing from there. It is also customary to employ the crystalline sodium carbonate there, which must also not be overlooked.

If we take into consideration the molecular weights of these two sulphites, $Na_2SO_3 = 126$ and $Na_2SO_3.\ 7H_2O = 252$, we find that the latter contains half its weight of water. No matter which salt we use it is rare to find it 100 per cent pure, and it may contain from [illegible] to 10 per cent impurities in the shape of sulphate, dithionate and carbonate. Actually one ought to test each batch, but this is a superfluous precaution, as an excess is always used. Of the two salts the anhydrous form keeps better in the dry state; and while we rarely want to keep a plain solution of sulphite, it may be noted that the best preservative, or at least the most practical, is 10 per cent of alcohol, and that probably the denatured will act as well as the pure ethyl alcohol. It is a curious fact that whereas sulphite is a preservative of the developing agents, the latter are also preservatives of the sulphite, and a mixture of the two keeps better than the plain solution of either. Naturally such solutions should be kept in well stoppered or corked bottles, and it is doubtful whether the various plans suggested to keep stock solutions, such as filling partly emptied bottles with coal gas, or pouring a thin film of oil on top of the liquid, are worth the trouble. Certainly, in the latter case, one has to be careful to draw the solution from the bottom of the bottle, so as not to have any contamination from the oil. The very common and convenient practice of making up one-solution stock developers is the least conducive to good keeping, as the alkaline solution oxidizes far more rapidly than the plain one.

When a two-solution developer is recommended, it is very common to suggest the addition of some acid to neutralize the sulphite; while any acid may be used, sulphuric is undoubtedly the best. If we use hydrochloric acid, some alkaline chloride is formed which acts as a restrainer, and the same applies to citric acid and citrate. Nitric acid forms the nitrate, which is without practical effect on development. Probably the best way to make a better keeping solution is that advised some years ago (Brit. J. Phot., 1909, **56**, 232):

Sodium sulphite, dry	2 oz.	100 g
Potassium metabisulphite	½ oz.	25 g
Water	20 oz.	1000 ccm

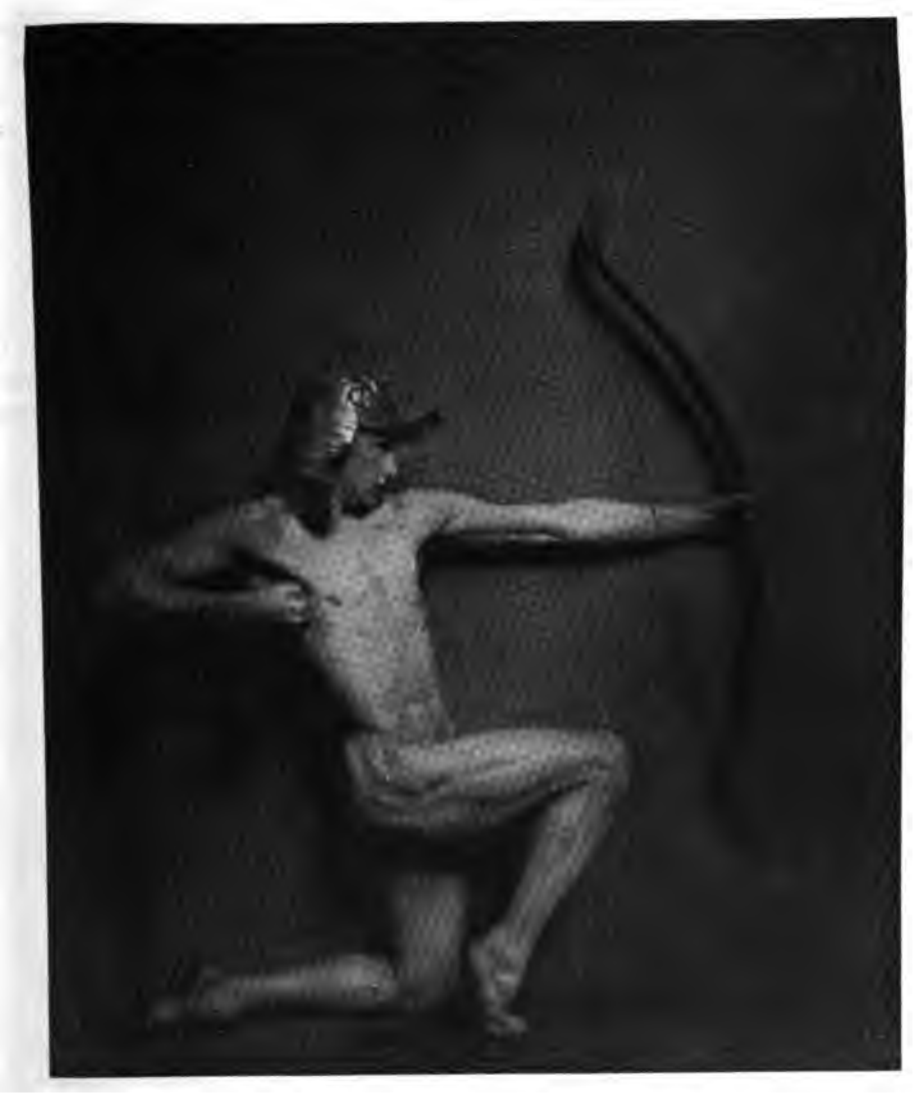
Dissolve at 33 °C. (63 ° Fahr.), raise the solution to the boiling point, and allow to cool. The action here is undoubtedly the neutralization of the carbonate which occurs as impurity, and possibly the formation of some complex salt. It would, therefore, seem feasible to use sulphurous acid instead of the potassium salt, with increase of the sulphite. Thus one could increase the sulphite to 3 oz. or 50 g, add 1 oz. or 50 ccm of U. S. P. sulphurous acid and boil, and obtain a similarly acting solution. To those who have not tried this so called "neutral sulphite," it can be warmly recommended on account of its great keeping powers.

Potassium metabisulphite, also called pyrosulphite, was recommended by Mawson & Swan (Brit. J. Almanac, 1887, 139; 1888, 316, 346) to replace the sulphite, as having greater keeping powers; the reason for this is that on solution it hydrolyzes, or splits up, into normal potassium sulphite and sulphurous acid, according to the equation: $K_2S_2O_5 + H_2O = K_2SO_3 + H_2SO_3$.

There are, of course, the corresponding potassium and ammonium sulphites, but they are never used in photography, though Eder (Phot. Korr., 1885, **22**, 111) suggested ammonium sulphite for use with the pyro-ammonia developer, but it never came into general practice. H. J. Gilder (Brit. J. Almanac, 1891, 718) recommended commercial liquid NH_4SO_3 (ammonium sulphite lye). The only other compound that we need consider in the sodium bisulphite.

Sodium bisulphite, or sodium acid sulphite, can be obtained either as a dry crystalline powder, smelling faintly of sulphur dioxide, SO_2, or as a liquid, when it is usually called bisulphite lye, acid sulphite lye or leucogen. There should be no difficulty in obtaining this, as it is largely used in the dyeing and bleaching industries, and was used, before prohibition came in, in the brewing industries also.

This is chiefly used as an addition to the fixing bath, though it is sometimes recommended as an addition to the developer. Unfortunately the lye is very variable in strength; it is supposed to have a strength of from 35 to 40 per cent, but rarely has. Unless one takes the trouble to titrate it or has a Beaumé hydrometer and access to a table of percentages, one must either take it as it comes or make it. The latter is not a difficult matter. The materials required are sodium sulphite and sulphuric acid. The formula for the acid sulphite is $NaHSO_3$, and comparing this with the normal sodium sulphite, it will be seen that one molecule of hydrogen, H, replaces one of sodium, Na. Commercially it is made by saturating a solution of sodium carbonate with sulphurous acid, there being generally a little excess of the acid. Starting with sulphite and sulphuric acid the equation representing the action is as follows:



THE ARCHER

NICKOLAS MURAY

One Man Show, The Camera Club, New York how much is neutralized; only, of course, if the caustic alkalis are used we no longer have the evolution of carbon dioxide, but water formed, thus:

$$H_2SO_3 + 2\ NaOH = Na_2SO_3 + 2H_2O.$$

It will thus be found that 100 grains of metabisulphite of potassium will neutralize the following quantities of the alkalis:

Caustic potash	50 gr.
Caustic soda	36 gr.
Potassium carbonate, dry	62 gr.
Sodium carbonate, dry	48 gr.
Sodium carbonate, cryst.	129 gr.

Therefore, if one elects to use the metabisulphite, the proper allowance must be made for the particular alkali used. But there is no special advantage in using this salt; it costs more and equally good results can be obtained by using the acid sulphite or even sulphurous acid itself.

If we compare the bisulphite with the sulphite in the same way, we have:

$$Na_2SO_3 = 46\ Na + 80\ (SO_3) = 126$$
$$NaHSO_3 = 23\ Na + 1H + 80\ (SO_3) = 104$$

So that in this case we have a ratio of 100:122 or practically 1:1.2.

Here also we have neutralization of the alkali, with the additional disadvantage that some bicarbonate is formed, when the carbonates are used, as shown by the following equation:

$$NaHSO_3 + Na_2CO_3 = Na_2SO_3 + NaHCO_3.$$

The bicarbonates are actually restrainers with most of the developers. But with the caustic alkalis this action cannot take place, and we have:

$$NaHSO_3 + KOH = NaKSO_3 + H_2O.$$

The only conclusion we can come to is that sodium bisulphite cannot be used with alkaline carbonates, but it may be used with the caustic alkalis, and then 100 grains will neutralize:

Caustic potash	54 gr.
Caustic soda	38.5 gr.

Comparing the bisulphite with the metabisulphite we have:

$$K_2SO_3.\ H_2SO_3 = 78\ K + 80\ (SO_3) + 2H + 80\ (SO_3) = 240$$
$$NaHSO_3 = 23\ Na + 1H + 80\ (SO_3) = 104$$

and we have the ratio of 120 of the former to 104 of the latter salt, or 100:87.

If one can obtain sulphite lye, the best thing to do to make it available for the replacement of dry sodium sulphite is to neutralize it by the addition of caustic potash, not soda, as the potassium-sodium-sulphite is much more soluble than the sodium salt, and really keeps better. This is not a difficult matter; the only additional material required is phenol-phthalein paper, which is white but turns deep red with the slightest trace of alkali. This may not be easily obtainable, but phenol-phthalein itself can be obtained at any drug store, and one need only make a 1 per cent solution of this in 85 per cent alcohol (denatured may be used), soak white filter or hard blotting paper in the solution, and dry. Assuming that we start with 750 ccm (26 oz.) of bisulphite lye of sp. gr. 1.28 (=32° Be.) we shall have about 350 g (12 oz. of) bisulphite. The caustic potash should be dissolved in water, and 185 g (7 oz.) should be dissolved in 400 ccm (14 oz.) distilled water. Care must be observed in doing this, as the heat evolved is considerable: the sticks should be added gradually to the water, preferably in a thin glass beaker or porcelain dish standing in cold water, with constant stirring; it is also probably needless to add that such a solution is extremely caustic and instantly attacks the skin. To the bisulphite solution

ADAME OLGA PETROVA
hite Studio, New York

we may add 350 ccm (10 oz.) of the potash solution and stir well, and then add more in small quantities, stirring well and testing the solution after each addition with the phenolphthalein paper till the latter turns red. As soon as this occurs a few drops of acid sulphite should be added to turn the paper white again, so as to have the solution very faintly acid. If the mixture then be diluted to 1270 ccm (44½ fld. oz.) we have a 1 in 3 solution of sodium-potassium-sulphite $NaKSO_3$. If caustic soda be used, we merely have normal sodium sulphite formed, which will not keep in a solution of the above strength, and some of the anhydrous sulphite will crystallize out.

No attempt has been made to give the various methods for testing sulphites, as these are hardly likely to be required by the average worker and they entail a rather closer acquaintance with quantitative analysis than is common.

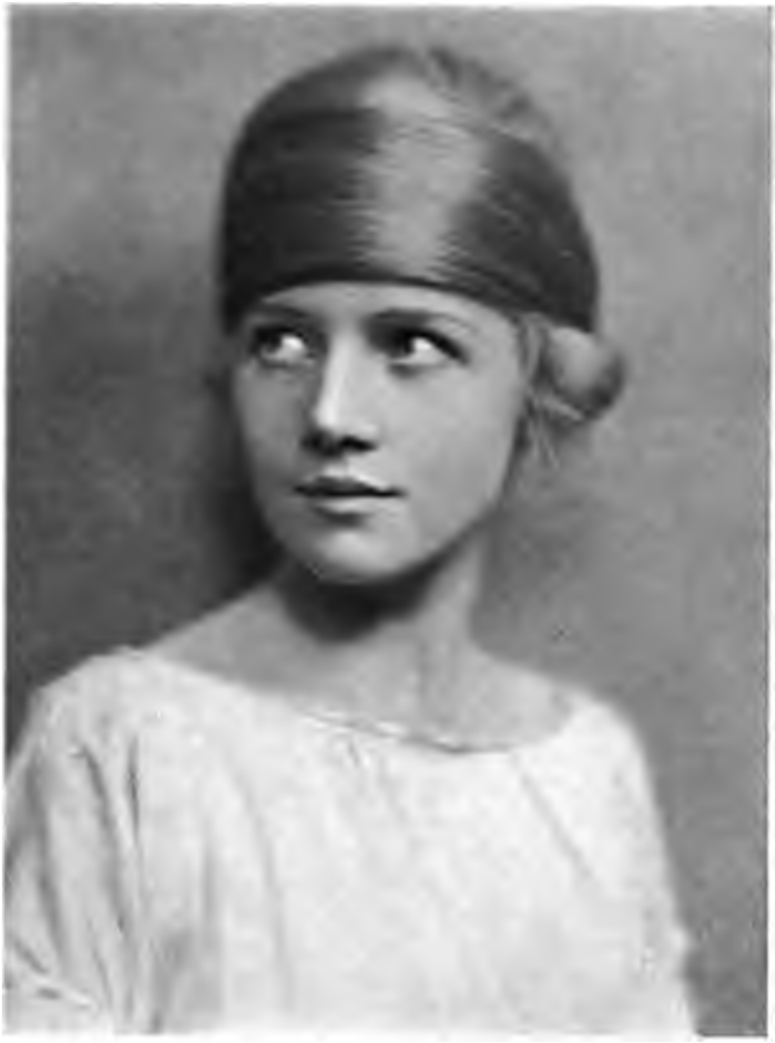
The only other sulphite compound that has not been mentioned is acetone-sulphite, $CH_3.CO.\ CH_3.NaHSO_3$, which was introduced by Bayer & Co., of Elberfeld, in 1901, and for which most absurdly extravagant claims were made; it was stated that it was 8 times as strong as the normal sulphite, but as its sole virtue lies in the SO_3 radical of the acid sulphite, the claims could not be upheld. It has never come into general use and had no advantage over the acid sulphite, except that it costs much more, and on the addition of an alkali, sulphite is formed and acetone set free.

Acetone-sulphite was patented by Bayer (D. R. P., 145,398, 1901) although W. B. Bolton (Brit. J. Phot., 1899, **46**, 92; 1899, **47**, 188) described its formation from bisulphite or metabisulphite and clearly gave the correct proportions and explained the action of the increase of alkali. This found no general application.

It has been stated above that excess of sulphite is generally used in developers, and this is, as is well known, a solvent for the haloid salts of silver. Valenta (Jahrbuch, 1895, **9**, 279) states that a 10 per cent solution dissolved 0.44 per cent silver chloride and 0.04 bromide, whilst a 20 per cent solution dissolved 0.95 per cent chloride and 0.08 bromide. If we assume that the normal developer for negative work contains 2.6 per cent sulphite, that for bromide papers 2.0 per cent, and that for gaslight papers 2.8 per cent, then some solvent action must take place. The action of a soluble silver salt in a developer is primarily to increase the rate of development. The metallic silver would naturally have a tendency to precipitate first on any silver nucleus present, which would be the image, but it would also tend to precipitate generally and would make itself apparent as fog. This might not be a serious matter with negatives, but it would probably be apparent in the case of papers, particularly development papers, as a general yellow tinge or dichroic fog. The deduction to be drawn is that the sulphite content should be reduced as low as possible compatible with non-staining, and that it is not wise to develop too many prints in the same lot of developer, irrespective of the action of the increasing quantity of sodium chloride or bromide formed by the deposition of the metallic silver.

This subject is extremely complicated, because as a soluble bromide is always added to developers, and this at once converts silver chloride into the bromide, which is much less soluble in sulphite, it will be seen that a very careful and laborious research would be required to definitely state the precise action of excess of sulphite, the starting point of which would have to be a precise knowledge of the ratio of the silver salts in an emulsion.

There is another point that complicates the subject, and that is that there is an optimum content of sulphite, which gives the least fog, as was proved by Mees and Welborne Piper (Brit. J. Phot., 1911, **58**, 419, 515, 535); and in the case of hydrochinon this is 2.5 per cent in the actual working solution; above and below this point there is a corresponding increase in fog. From practice it has been found that the same thing applies to metol-hydrochinone, and this would seem contradictory to the solvent action.



[illegible] HARDING
[illegible] MURAY
[illegible] Show, *The Camera Club, New York*

NICKOLAS MURAY AT THE CAMERA CLUB

FLOYD VAIL, F.R.P.S.

A YOUNG professional photographer has recently been attracting considerable attention at the salons of London, Toronto and the United States, and by his illustrations in *Vogue*, *Vanity Fair*, *Shadowland* and other publications. His really unusual presentations of figures, portraits and characterizations seldom fail to awaken interest and admiration, because they almost invariably possess originality. This photographer — Nickolas Muray, of New York — gave a one-man show at The Camera Club, New York, during the month of December, 1921. It attracted a great deal of attention and deservedly received very high commendations.

His exhibit consisted of fifty-three examples, 11 x 14 in size, mounted on white cards 14 x 19, their uniformity enhancing their attractiveness. They were all bromide enlargements.

"Composition," featuring two nude figures posed uniquely in an archway, with flecks of sunshine gilding their beautiful forms, the skin textures perfectly rendered, was one of the motives that claimed recurrent attention. This was shown at the London Salon, 1921.

"Abandon," also at London, presented a partly wrapped female dancer, lithe and supple, that actually emulated movement — an unusual accomplishment in photography — and was one of the few dancing pictures one sees that is out of the ordinary.

"Nude Study" (London Salon, 1921) was a distinctive single-figure motive of textural excellence, outstanding beauty of line and symmetry.

"Eugene O'Neill," author of *Emperor Jones*, was a very strong portrait, an excellent likeness and possessed of many characteristic suggestions.

"Doris Kenyon," the film star, was shown with every feature and charm of manner so well known to the public.

"Miss Folup" resembled in looks and representation the Mona Lisa, and was a specimen of portraiture unconventional and seldom approached.

"Miss Winston" was at the Royal, 1921, and is probably one of the best portraits of the year from all points of view.

"Rosa Rolando" featured a daughter of Castile in her radiant beauty and vivacious manner and coquetry. The typical costume, *coiffure*, and high hat, was a presentation seldom outranked.

"The Brigand" was most ferocious, with his immense sword and piratical pose and threatening attitude, and was liked particularly for the design and pattern evolved.

"Aztec Dancer" was true to tradition, as to attire and movement, and was much admired for its unsophisticated results.

"The Rainbow" is sure to score a success at the Salons next year. It developed a most delightful pattern, with a beautiful female figure radiant in a striking contrast with flowing black lace.

"The Archer," accepted at both Toronto and London Salons, discloses a nude male of wonderful muscular development, with a bow from which an arrow has just been sped, one arm drawn back, the other extended; and it was so unusual a picture that it held many in rapt attention and admiration.

"The Globe" was reproduced in Photograms of the Year 1920, and appeared in the

MME. FOKINA NICKOLAS MURAY
One Man Show, The Camera Club, New York

signed for this purpose, but there is also in almost every home an instrument that can be readily adapted for testing shutters that work not faster than one one-hundredth of a second — the phonograph.

Take a record — preferably an old or cracked one — and paste on it a strip of white paper extending from the hole in the center to the outside edge. This strip of paper should be about one quarter of an inch wide and must have its edges straight and parallel. Take the phonograph out into the sunlight and set up the camera over it with the lens pointing downward and focused on the record. This can be done by means of a ball and socket clamp or a tilting tripod top. In default of these, place a chair on either side of the phonograph and rest two boards across their backs with space enough between the boards for the camera lens and bellows to slip through.

Wind the phonograph up tight, turn the sound box arm back out of the way, move the speed regulator up to "fast," and start the machine. With a watch in hand, count

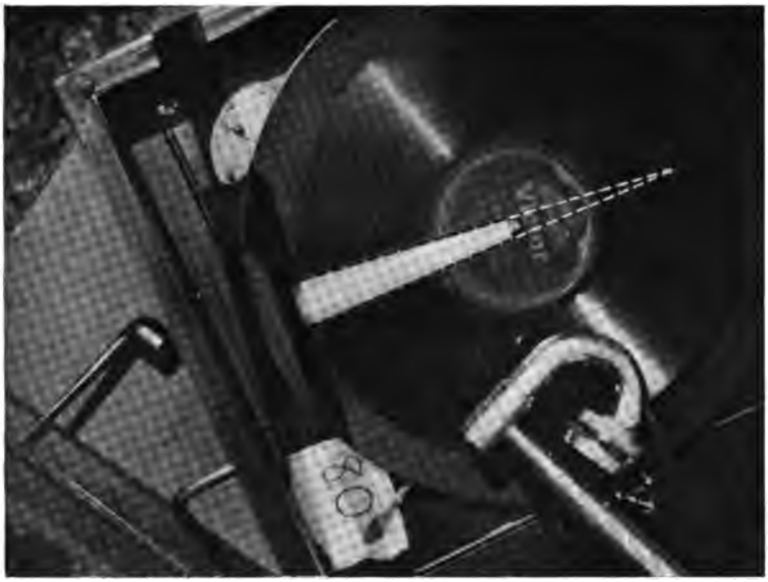


Figure 1

the number of revolutions the record makes in one minute — count it even if the speed is marked on the machine, as these marked figures are not always correct. In order to avoid uncertainty later, it is well to write this count with a soft pencil on a scrap of paper and put it on the phonograph where it will show in the picture you are about to take. In Fig. 1 you will see a penciled "80" on a scrap of paper under the starting lever. An even higher speed would have been preferable.

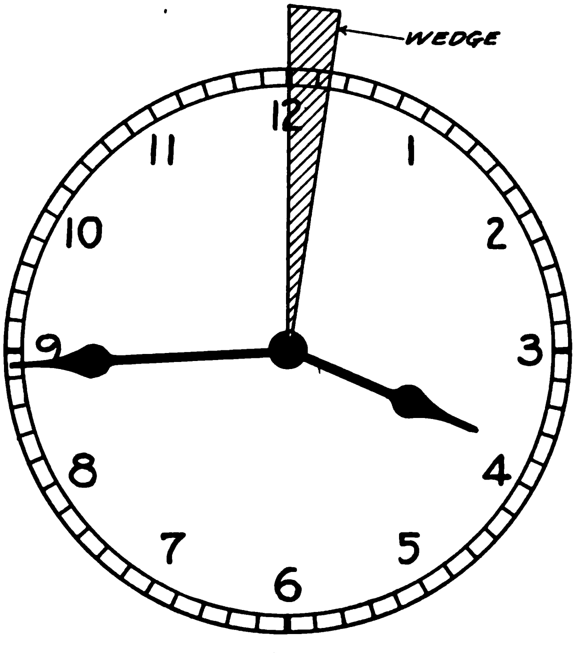


Fig. 2

Now, with everything ready, wind up the phonograph again, start it running, and as soon as it is turning smoothly, take a picture of it with your shutter set at the speed you wish to test.

When the film is developed you will have a negative that will give a print similar to Fig. 1. On this print, the strip of paper on the record looks like a strip no longer, but is wedge-shaped — wide at the edge of the record and narrowing as it approaches the center. The reason of this is that the strip moved quite a bit in the short time the shutter was open. Now if you measure the angle of this wedge you can tell how long the shutter was open — or its speed.

In order to measure this angle, use a ruler and a sharp pencil to draw

AZTEC DANCER NICKOLAS MURAY

One Man Show, The Camera Club, New York

fine line exactly along each edge of the wedge, as shown by the dotted lines of Fig. 1. f you are familiar with the measurement of angles or if you have a mathematical friend 'ho can show you how, all well and good. Otherwise, cut out your print along the encil lines clear down to their point of intersection, and lay the wedge-shaped piece of aper thus obtained on the face of a watch or small clock as shown in Fig. 2.

As we all know, a circle contains 360 degrees. The minute marks on the face of a 'atch divide a circle into 60 equal parts, so that each minute must have a value of 360 ivided by 60, or 6 degrees. Now when you place your wedge of paper with its point xactly over the center of the watch face and with one of its edges exactly over the twelve clock mark, you can tell by the number of minutes it covers just how many degrees it ntains. Allow 6 degrees for each whole minute covered, and if there are fractions of a inute, estimate these as closely as you can, multiply by 6, and add to the product of the hole minutes. Thus, in Fig. 2, the wedge covers one whole minute and about one third of another. The whole minute has a value of 6 degrees. The third of a minute is equal to 1-3 x 6, or 2 degrees. Therefore the angle of the wedge of paper is 6 + 2, or 8 degrees.

In calculating the speed of the shutter, this figure is to be divided by the number of degrees the phonograph record rotated in one second. We know how many revolutions the record made in one minute — in this case 80. Dividing this by 60, we find how many revolutions it made in one second — in this case 80 divided by 60, or $1\frac{1}{3}$. Multiplying this by 360 — the number of degrees in one complete revolution — we find how many *degrees* the record rotated in one second:

$$1\tfrac{1}{3} \times 360 = 480.$$

Going back to the 8 degrees we found for the wedge and dividing this by 480, we have 8 divided by 480 = 1-60 second, which is the length of time the shutter was open — or its "speed."

A simple way of obtaining the same result without going through the calculation given in the preceding paragraph is to divide the angle of the wedge by six times the number of revolutions per minute of the record, or:

$$\text{Shutter speed} = \frac{\text{degrees in angle of wedge}}{6 \times \text{rev. per min. of record}} = \frac{8}{6 \times 80} = \frac{1}{60}$$

the same result as obtained before.

The simple test described above should be made not only when the camera is first bought, but also at intervals of about a year in order to check up on any slowing down of the shutter from hard usage or an accumulation of dust. Such a test made just before starting on an extended trip is your best insurance against disappointment.

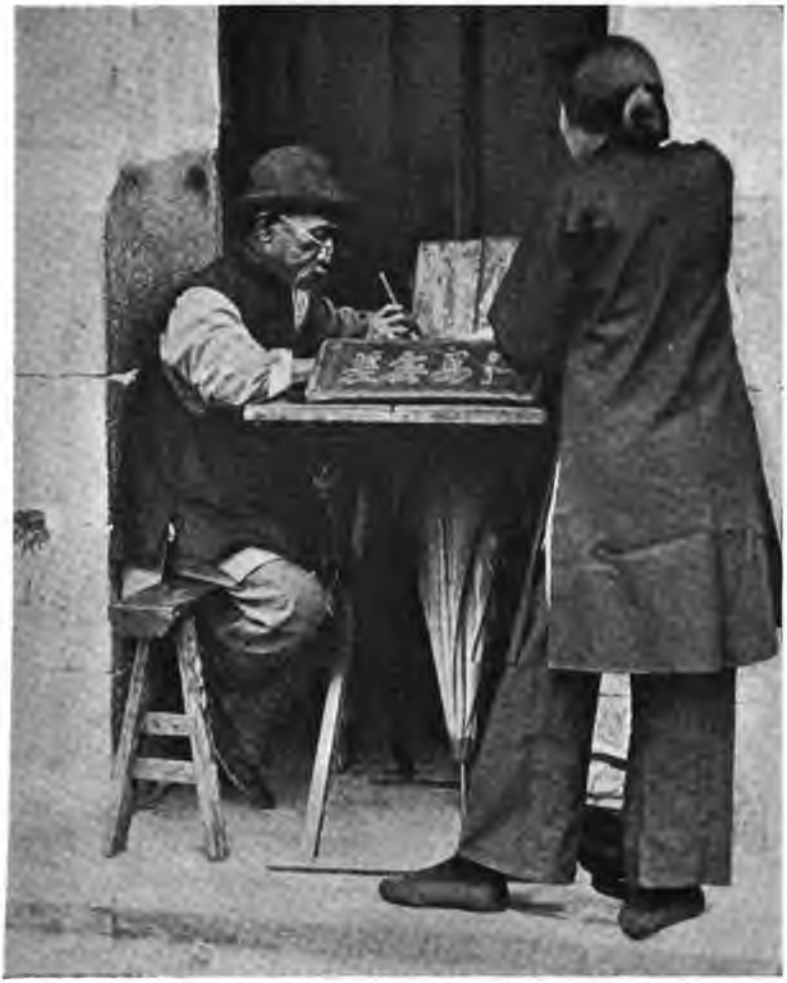
TO BOOST THE BEGINNER

WM. P. MATTERN

I OFTEN wonder why it is, that, of all the persons who own cameras and who take pictures, only a few comparatively are interested in photography as a worthy study, and not merely as a means to an end — that of recording events pictorially. To be in the photo-finishing business and to see so many negatives come in that are worthless, anyway you look at them, is enough to cause anyone to think; even if they-er-have never done so before. You would imagine that people who produce results that are 50% failures, would try and accomplish something in the way of "looking it up" if only to save themselves money. From an average of two hundred rolls a day brought in to be developed and printed, there are sent out about six hundred prints that have some resemblance to the subject the camera was "aimed at." Just a minute before you start figuring; about seventy-five of those rolls are of twelve exposures; and half of them represent the loss in one day's outing for perhaps a hundred cameras.

If film manufacturers raised the price of their product about 100%, there would be a mighty howl put up by these same people. When they destroy practically half of the material they pay for, it isn't necessary for anyone to raise prices until the supply runs short.

Most of those who take pictures take them merely for the pleasure of pushing the button, it seems; for although we hear a lot about original photographs and pictures of distinction, we have yet to be overwhelmed by their plentifulness.



THE LETTER WRITER F. WESTON

the other hand, the results obtained by stealth and strategy have
e of success, being in most cases characteristic, if not pictorial.
in work of this kind is a reflex camera fitted with a rapid lens.
importance is a fund of patience, as a successful result often means
uvering. I used a 3½ x 2½ Minex Camera fitted with a *f*:3.1
ys employed as open a stop as circumstances would permit, as
esting studies are to be found in narrow village streets, temple

opportunity is presented when the victim is caught alone. I
mera slung ready round my neck, but if it should be in its case
carefully turn his back to the victim and bring out and prepare
isplay, and then examine the landscape very emphatically in
ght one, pointing, if with a companion, to various objects which
ered interesting. After a time the camera should be slowly
cle, passing the victim *en route*. He generally becomes restive

WESTON

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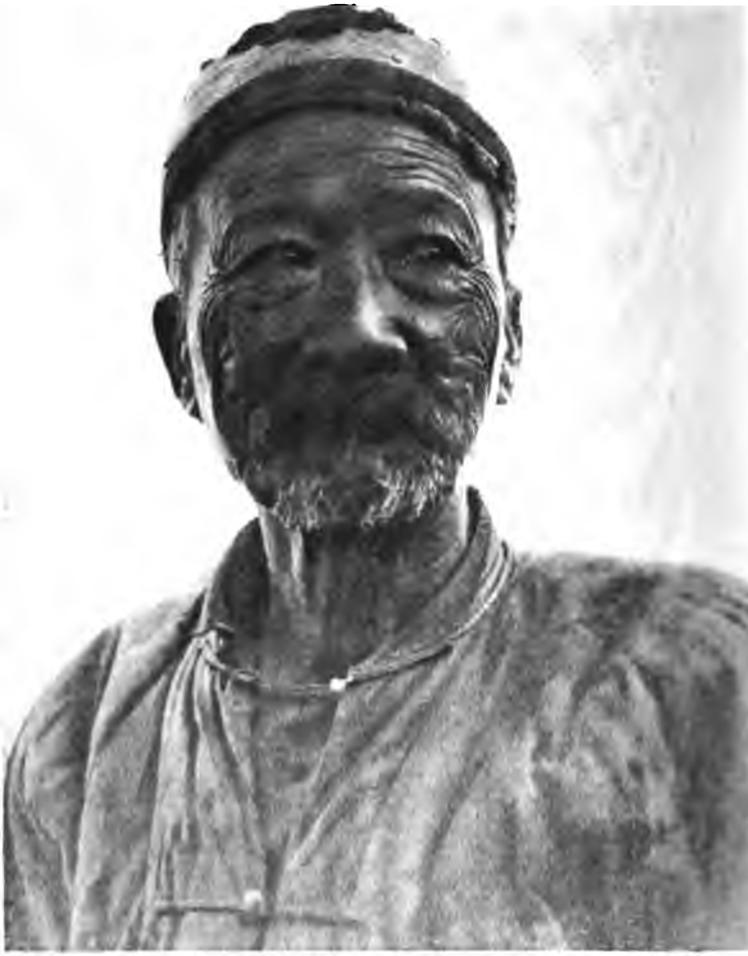
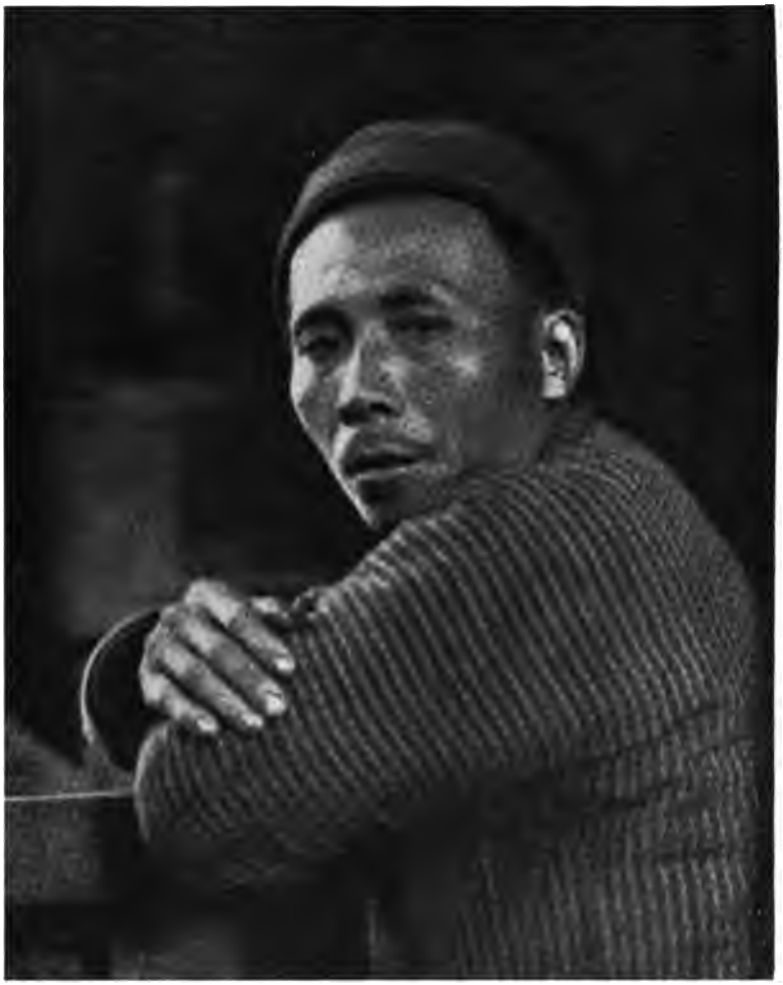


A HEAD WELL STORED WITH SUBTLE WILES F. WEST

at this stage, and if one's luck is out, may make off. With a are even that curiosity will induce him to remain; but a wo overcome by fear or shyness. The picture "*A Head Well St* obtained in this way.

Should the model face this ordeal, although he may cove should be repeated with variations until he regains complete different to the camera in watching the peculiar doings of the s stage, during the usual sweep, the shutter is released while slo no halt is made until the camera is pointing in another directio be made of taking a photograph. The noise of a shutter some the prey bolts; but he often stays and offers opportunities for f by my wife and myself of "*A Shopman of Cathay*" was obta model had uneasily shifted several times from spot to spot in

Should the victim be encountered at close quarters or b as to approach to see exactly what is being done, he should b



A SHOPMAN OF CATHAY F. WESTON

lowed to look at the picture in the hood. After a certain amount of maneuvering it ay be possible to get him into a suitable position for photographing. Our picture "*Old ina,*" which appeared in the London Salon of 1915, was obtained in this way.

There are occasions when the people are so interested in their own occupations that ey are easily stalked. The whole environs are examined carefully by means of the camera, rsory glances being cast in the direction of the group. After a time one should venture arer and attempt exposures. After half an hour's stalking of this kind five plates were posed at decent intervals and from different points of view on a group playing a game cards in a temple court. Only one was successful, that which we call "*The Game,*" and ich was hung in the London Salon for 1916. The "*Letter Writer*" and "*Cupid of the mpans*" were obtained in similar way.

It frequently happens that a large crowd collects. The proper course then is to ow as many as possible to look into the hood. One immediately becomes the centre of crum in which it is desirable to look out for diseased heads. In fact care should be ten to allow nobody actually to touch the hood. If any individual becomes too strenu-

CUPID OF THE SAMPANS F. WESTON

ous, he should be ordered off with gesticulations. That part of the crowd v looking at the ground glass will generally see that he goes. Sometimes howev is wonderfully decorous and dignified, and occasional individuals are quit apologetic in their approach.

The difficulty on these occasions is to get the victim satisfactorily isolated. of taking each individual, however, will generally cause a general opening ou a time, by holding the camera low down, and looking over the shoulder of t at the ground glass one gets a suitable opportunity for releasing the shutt mirror flies up and the picture disappears it should be pretended that it was benefit of the spectators. In fact it is a good plan to release the shutter a few actual business. If we spoilt a plate we always solemnly presented it to one o

A mirror to be hung in front of the lens so that pictures can be obtained at to the direction in which the lens is pointing ought to be very useful, and we from home; but on arrival it did not fit the camera, and we finished our th years in China without it. A rapid long focus lens such as the new Adons centric also would on occasions be most helpful.

Of course this style of photography is not always a bed of roses. Sometir will induce the victims to remain or get them into a satisfactory position; and

IDLE MOMENTS C. J. MARVIN

American Photography Annual Competition; London Salon

long endeavors, the results are useless. The frightful smells of the villages, the heat, and the flies, have to be endured; and on one occasion we noticed in the crowd a boy with the marks of smallpox fresh upon him. Needless to say, we fled precipitately. At any signs of decided disapprobation the camera should at once be put away; but this seldom happened with us, as all our photography was done among people used to the sight of Europeans. Further inland it might have been different. In strange districts the temper of the people should be tested before taking liberties.

Whatever happens it is necessary to use tact and to keep smiling. The Chinese love a laugh, and if they once laugh it can be assumed that everything is all right and you can go ahead. If any mishap occurs to the photographer or to one of themselves they are hugely delighted, but especially if it be to the photographer who is concerned. The proper thing to do then, of course, is to laugh oneself, as loud as possible. The greatest thing of all, however, in attempting this class of photography is to know first something of the people and their ways, and to be thoroughly imbued with the spirit of the East.

ON CONVECTION EFFECTS IN PHOTOGRAPHIC BATHING OPERATIONS IN ABSENCE OF AGITATION

E. R. BULLOCK

Communication No. 133 from the Research Laboratory of the Eastman Kodak Company

WHEN a silver image in gelatine on a strip of glass or film support is immersed vertically and then left at rest in a solution of potassium ferricyanide and potassium iodide in a glass tube, it can be seen while watching the course of the bleaching action that the rate of bleaching is greater at the lower than at the upper end of the strip. This phenomenon has now been submitted to an investigation, which, although somewhat hurried and in some respects incomplete, has led to results and conclusions of sufficient apparent definiteness and general interest to justify their publication. As far as the writer is aware, the subject in its general bearing on photographic bathing operations has not been discussed in the literature hitherto, although certain of the facts involved, such as the appearances which arise in stand development when agitation of the developer or reversal of the tank is omitted, have been described.

The above-mentioned effect has been noticed previously in the laboratory and attracted the writer's attention recently when bleaching some short lengths of printed cinematograph film in a solution of potassium ferricyanide 1% and potassium iodide 0.3%. The first suggestion of a lack of uniformity in the picture was quickly shown to be unfounded; and the effect was obtained equally (1) under various degrees of illumination, (2) when the solution was protected from evaporation, and (3) under the pressure due to a head of 35″ of the solution. The effect was also obtained equally with silver images in (1) gelatine on glass, (2) collodion on glass, and (3) gelatine on film support. As the result of density measurements it was found that with glass and film alike the density of a partly bleached (and then fixed) image diminishes continuously from the top to the bottom, the rate of diminution not being uniform, however, but tending to be less in the middle portion than either near the top or near the bottom. (In the illustration, "I" is a short strip of film picture which has been bleached in ferricyanide-iodide solution and fixed.) As regards the magnitude of the effect, it may be mentioned that density measurements of one particular plate, 16 cm in length, that had been uniformly "flashed," developed, cut lengthwise into two, and one-half then partly bleached by vertical immersion in ferricyanide-iodide, and fixed in hypo, showed that the density has been reduced to about 25% of its original value at a level 1 cm from the top and to about 10% at 1 cm from the bottom.

The magnitude of the effect is influenced, although not very greatly, by the length of the immersed image, being somewhat greater the longer the image. If two or more strips of film are arranged in a long tube, either one strip immediately above another or with intervals between each strip, and bleached simultaneously, each strip shows the effect independently of its position and in a degree varying only with its length. A moderate degree of vibration has no appreciable influence on the effect; this was shown by comparative tests in two buildings, in one of which the vibration (due to proximity of machinery) is much greater than in the other. Shaking the tube by hand, or stirring the solution, during the reaction, however, entirely prevents the appearance of the effect.

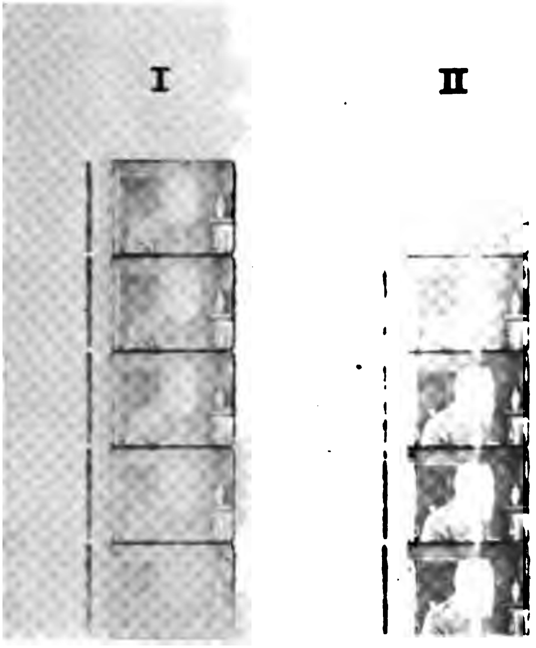
Passing now to the effect of other halidizing (halogenizing) bleaches, it was found to be

THE BIRD'S TWILIGHT SONG LYLE A. MORSE

First Prize, January Senior Competition

generally true that a bleach (such as ferricyanide-iodide or iodine-in-potassium-iodide solution) which converts silver to silver iodide shows the effect more strongly than one which converts silver to silver bromide. Of the latter, ferricyanide-bromide, permanganate-bromide, chromic acid-bromide, and bromine water were tried; the effect being always found although less strongly marked. With chloridizing (chlorinating) bleaches (such as permanganate-chloride or chromic acid-chloride) the effect was also always found but in a further diminished degree. The invariability with which these results were obtained, and the regular gradation in the magnitude of the effect when passing from iodide through bromide to chloride, with a variety of images in gelatine on glass or film support, suggested that a consideration of the physical chemistry of the reactions would reveal some simple explanation of the main effect.

It was obvious, on consideration, that the chemical process which (and which alone) is common to all of the above-mentioned bleaching reactions is the union of silver with halogen, that is, with iodine, bromine, or chlorine. The halogen is *lost* by the solution and *gained* by the image held in the gelatine film, entailing changes (in accordance with known physico-chemical data) of volume and density of both solution and image. Of these changes there is one, namely, the *density*-change of the *solution*, which will give rise to motion in the form of a gravitational convection current. Density being diminished, an



Showing Partial Action Of
I— Ferricyanide–Iodide
II—Chromic Acid Solution

upward current will be established along the surface of the film and will continue throughout the course of the chemical reaction. Provided that the reaction-products do not catalyze the reaction, the current must have the effect of accelerating the reaction at the point where it begins (that is, at the bottom of the film) and of accelerating it in a smaller and smaller degree or of actually retarding it when it has suffered a loss of halogen during its upward progress along the surface of the gelatine film. This is exactly the effect observed; and the explanation was therefore regarded as a satisfactory one at this point and was used as a working basis for arranging new experiments. In the case of a reaction in which the density of the solution *increases*, a *downward* current should be produced and provided that the reaction-products do not catalyze the reaction, the latter should be accelerated at the top of the film and relatively retarded at the bottom. Again, an increase in the viscosity of the solution should, in general, entail a change in the magnitude of the effect.

It had been found that the magnitude of the effect did not vary very appreciably with the time required just to bleach an image completely at its lower end, provided that this time was of the order of five minutes, and the concentrations of the various halidizing bleaches used in the comparative tests had been adjusted accordingly. A solution containing chromic anhyride 0.05% and sulphuric acid 0.2% was now found to attack the image at about this rate, giving, in accordance with the theory tentatively proposed, a reversed effect, namely, an accelerated reaction at the top of the film, and a relatively retarded one at the bottom. (In the illustration, "II" shows the partial action of this bath.) It should be stated that not quite the whole of the silver that is attacked is carried into solution by the action of this bath, a small portion remaining in the image as silver chromate, removable by fixing in hypo. A striking comparison is, nevertheless, shown by using this bath respectively without and with the addition of potassium bromide to the extent of about 0.5%; the action being greatest in the former case at the top and in the latter at the bottom. Permanganate-sulphuric acid solution was tried and found to act like the chromic acid-sulphuric acid solution, both as to the direction and the degree of the effect. Persulphate-sulphuric acid gave a comparatively feeble effect in the same direction. In this case [1] in view of the auto-catalytic character of the reaction [2] the observed diminution

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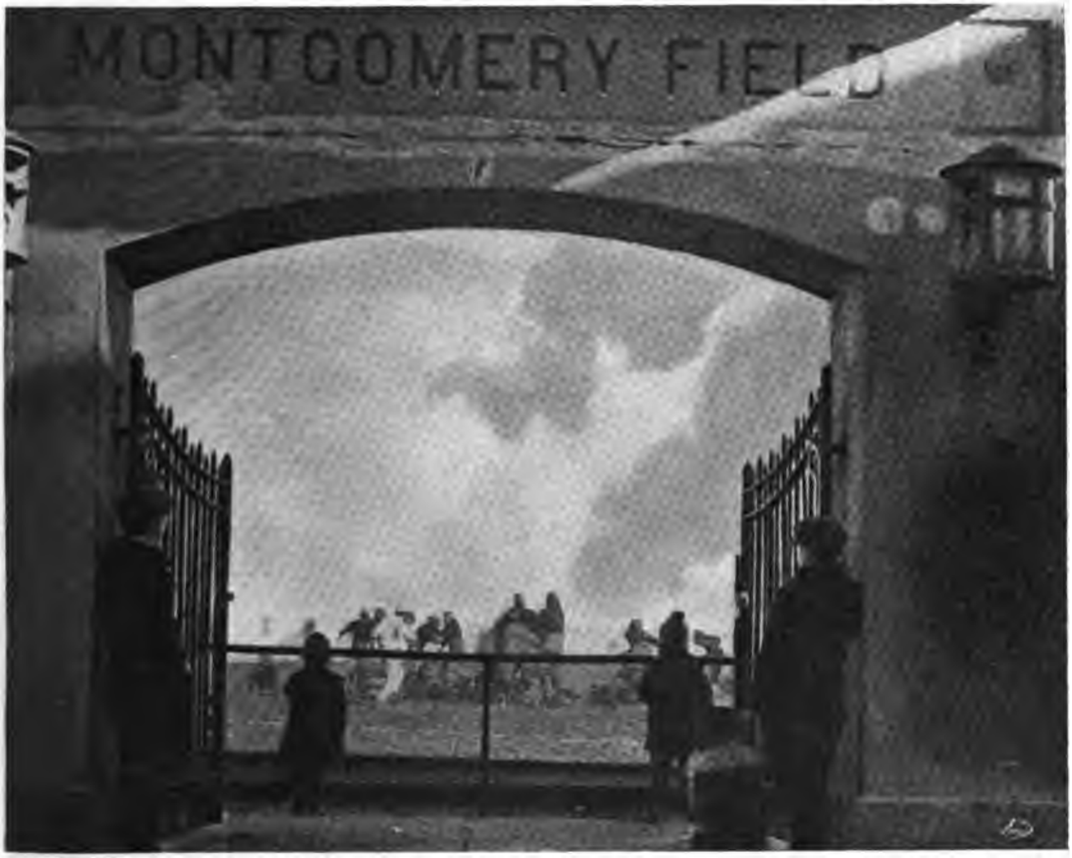
[1] Stratochemical effects are described as Sheppard in a paper to be published on the *Persulphate Reduction Anomaly*.

[2] H. Marshall, "Action of Silver Salts on Ammonium Persulphate Solution," *Trans. Roy. Soc. Edinburgh*, 1900, ***23***, 163.



THE GAME SUPREME — JOHN C. BIRD

Second Prize, January Senior Competition

is intelligible, as also, indeed, would have been a reversal of the effect. Silver-dissolving solutions other than these were not tried, as it appeared that the result predicted from the proposed theory had been found without a doubt.

According to the theory, also, an increase in the viscosity of the solution should be accompanied, in general, by a change in the magnitude of the effect. Inasmuch as diffusion as well as convection is impeded by an increase in viscosity and an impedance of diffusion may increase the effect while an impedance of convection will certainly diminish it, it was not possible to predict the result which will be found. As a means of increasing the viscosity of the solutions without affecting the nature of the chemical process, pure sodium sulphate was added in varying amounts up to saturation to ferricyanide-iodide and chromic acid-sulphuric acid solutions, respectively. After increasing the concentration of the active constituents to compensate for the general showing of the reactions, a distinct diminution in the magnitude of the effect was observed when much sodium sulphate was present in the former case, while in the latter there was little or no difference.

Attempts were now made to demonstrate the actual presence of convection currents during the chemical reactions of the two types considered. The first thought was that of adding to the solution some kind of particles sufficiently large to be individually visible and yet sufficiently small or of sufficiently low density to remain in suspension for at least

PORTRAIT OF A MODERN GIRL MRS. STERLING SMITH
Third Prize, January Senior Competition

about five minutes. Lamp-black, sulphur, and silver halides were tried, and oc
a drift of the particle in the direction indicated by the theory was observed,
substances as used were obviously unsatisfactory for the purpose. Short fibres ac
present in the solution having been seen to move either up or down the vertically-
film when by chance they had come into its immediate neighborhood, this sug
deliberate use of cotton fibers. A small piece of cotton-wool was pulled out by
the filters cut transversely into short lengths by means of scissors. When ad
solution, these short pieces of cotton fiber settled only slowly, were readily vi
brightly illuminated, and showed the position, direction, and duration of the
their movement. While it is doubtless possible to find other more suitable r
the use of short lengths of cotton fiber in the solution seems reasonably satisf
the demonstration of the actual existence of the theoretically-indicated curre

WHAT SHALL I WRITE? THEO M. FISHER

Second Prize, January Junior Competition

phenomenon is more striking in the case of an upward than in that of a downward current, for in the former case the particles are borne away from the region into which they are slowly settling by gravitation, travel up the surface of the film and into the solution above it, and then turn in a fountain-like curve and descend at a greater distance from the film.

A method of general application for the demonstration of the occurrence of chemical reactions between images in gelatine films and solutions in which the films are immersed appears therefore to be available. It will fail only in the special case of the density of the solution being unaltered by the reaction. The method may prove useful in the investigation of photographic and general chemical problems. One example of its application will be mentioned. Potassium selenocyanide (KCNSe) has been observed at one time by the writer to behave as a somewhat powerful restrainer when added to a developer, and it was surmised that the solubility of the corresponding silver salt was quite small. In order to determine where the solubility lies in comparison with the solubilities of the silver halides, the following experiment was made. Images on cinematograph film were bleached to silver chloride, bromide and iodide respectively, then immersed vertically in an 0.5% potassium selenocyanide solution to which cotton fibers had been added. In the case of the chloride image, an upward current, lasting for about 3.5 minutes, was observed; with the bromide image a relatively very feeble current lasting for at least 5.5 minutes, and with the iodide image no current, were seen. Images of silver selenocyanide, as obtained by somewhat prolonged immersion of the chloride images in the selenocyanide solution, followed by washing, were then immersed in an 0.5% potassium bromide solution: no movement of the cotton fibers could be observed. It is thus apparent that while a reaction is shown between silver bromide and dilute potassium selenocyanide solution, no reaction is shown either in the case of silver iodide or between silver selenocyanide and dilute potassium bromide solution; and the inference is permissible that the solubility (in water) of silver selenocyanide falls between the solubilities of silver bromide and silver iodide.

Passing now to the subject of *stand development*, it is of practical importance to minimize spontaneous convection and the consequent variation of action at different levels of the immersed emulsion film.[3] (In the case of bleaching reactions the practical question scarcely arises, inasmuch as the reaction is — almost invariably — allowed to proceed to completion; and in the case of the silver-dissolving reactions, these are either carried to completion as in the Autochrome reversal, or under control in a tray as in the persulphate reduction of negatives.) From a consideration of the chemistry of development — broadly speaking, a gain of halogen by the solution — it may be predicted that convection effects do, in general, occur whenever agitation is omitted, not only when the emulsion film is vertical but also when inclined or horizontal. With vertical immersion, as in ordinary stand development, the current should be downward, causing stronger action at the top than at the bottom of the film, and the effect should be strongest in the development of silver iodide and weakest in that of silver chloride. In order to test the correctness of these conclusions, the following experiments were carried out. Strips from a roll of positive cinematograph film containing a series of uniformly exposed and developed images from one and the same negative image were bleached respectively to chloride by means of a freshly-prepared solution of potassium permanganate, sulphuric acid and sodium chloride followed by a clearing solution of sodium bisulphite, to bromide by means of a ferricyanide-bromide, and to iodide by means of a ferricyanide-iodide solution. The bleached strips were in all cases washed for about 20 minutes and then dried, the washing, drying, and subsequent development being carried out in subdued daylight, taking great care that the light exposure received by each strip should be fairly uniform throughout its length. Three different developers — amidol, MQ., and pyro-soda — were now taken and so diluted that a satisfactory degree of development was effected in about five minutes in the cases of the chloride and bromide images; for the iodide images the developers were used undiluted. Treatment of each of the three kinds of images with each of the three images showed clearly, in 7 out of the 9 cases, a somewhat greater degree of development at the top than at the bottom of the strips; in the other 2 cases, however, the reverse effect was found. These cases were those of the action of dilute pyro-soda developer on the chloride and bromide images, and the reason for the anomaly was quickly surmised —

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[3] The influence of stirring on the rate of fixation was investigated by Sheppard and Mees (Investigations, pp. 126-129.) Inequality of fixation-rate was traced to convection currents, and the existence of these has been observed by Sheppard and Davis (in a paper to be published).

ON THE HOME TRAIL—CHINA CHARLES H. KRAGH

First Prize, January Junior Competition

by mistaken analogy a misapprehension has crept into the photographic[4] literature. For the sparingly soluble thiosulphate having the composition $NaAgS_2O_3$, which was obtained by Lenz in 1841 and by Rosenheim and Steinhauser in 1900 was obtained respectively by a reaction between hypo and silver nitrate and one between hypo and freshly precipitated silver chloride; and, on solubility considerations, it does not necessarily follow that this particular double thiosulphate is obtainable also from hypo and silver bromide or iodide in the condition in which these salts exist in the photographic emulsion. Experiments by Mr. J. G. Capstaff of this laboratory in 1917 showed indeed that in the case of bromo-iodide plates an immersion in the fixing bath only up to the point of complete clearing, followed by a washing of ordinary duration, was sufficient for the practically complete removal of the silver halides, as shown by the absence of a discoloration on treatment with sodium sulphide solution.

SUMMARY AND CONCLUSIONS

1. The relatively more rapid bleaching of a silver image on cinematograph film at the lower end of a strip immersed vertically in a ferricyanide-iodide solution was found to be a special case of a general phenomenon which is seen with all silver images on an impervious support when immersed vertically in any halidizing (halogenizing) bleach.
2. By theoretical reasoning it was concluded that the above-mentioned phenomenon

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[4] See, for example, Abney's Instruction in Photography, 1905 edition, p. 41.

must be attributed to the effect of the existence of an upward convection current having its origin in the diminution of density of the bleach solution in contact with the image by the chemical reaction which takes place.

3. Silver-dissolving solutions were found to act more rapidly at the upper than at the lower end of a vertically immersed silver image. The actual existence of upward convection currents during the action of halidizing bleaches, and of downward currents with silver-dissolving solutions, was demonstrated by the motions of suspended short lengths of cotton fibers.

4. A general method is thus available for the demonstration of the occurrence of a chemical reaction between a solid and liquid. As an example, it was found that silver bromide reacts with a dilute potassium selenocyanide solution, and from this fact (with others) it was concluded that silver selenocyanide is less soluble than silver bromide but more soluble than silver iodide.

5. In ordinary stand development (with vertical immersion and without agitation) a downward current prevails and the degrees of development is accordingly somewhat greater near the top than near the bottom of a negative; under usual conditions the density difference due to this cause is of the order of 5% or 10%.

6. Convection effects during the fixing of a bromo-iodide emulsion seem to harmonize with the view that, broadly speaking, the silver bromide dissolves before the silver iodide. It is probable that immediately after the disappearance of the last traces of opacity during the fixing of a bromo-iodide emulsion the whole of the silver had been converted into the very soluble double thiosulphate.

HOW TO CHANGE AN AMATEUR PRINTING BOX INTO A PROFESSIONAL

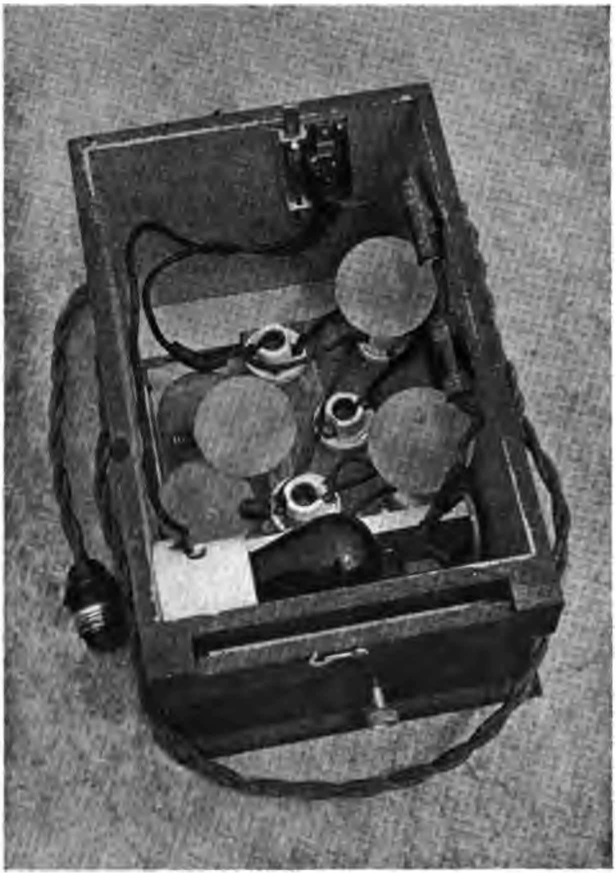
A. D. WALTZ

THERE are many photographers who are just passing through a transitional stage, either from amateurs to professionals or from amateurs to advanced pictorialists who might be called "semi-professionals."

These photographers possess a more or less complete amateur outfit for developing and printing, among which is sure to be an electrical printing box of some sort. I personally have used an Eastman "Kodak Amateur Printer" for a number of years and it has proven very satisfactory up to a certain point.

Its advantages were, an easily adjustable masking device, and movability of the printing light. Its disadvantages lay in the fact that it could not accommodate a larger light than a 60-watt Mazda, and did not have a groundglass diffusion screen. I tried a 75-watt Mazda, but found that the concentrated filament caused too much fading out of the print at the edges or one end. This was also the case when using the regular 60-watt Mazda with dense negatives. Inserting a groundglass above the globe proved ineffectual, as it cut down the printing speed so much that dense negatives could not be printed on anything but very fast paper and the unevenness of lighting was still apparent.

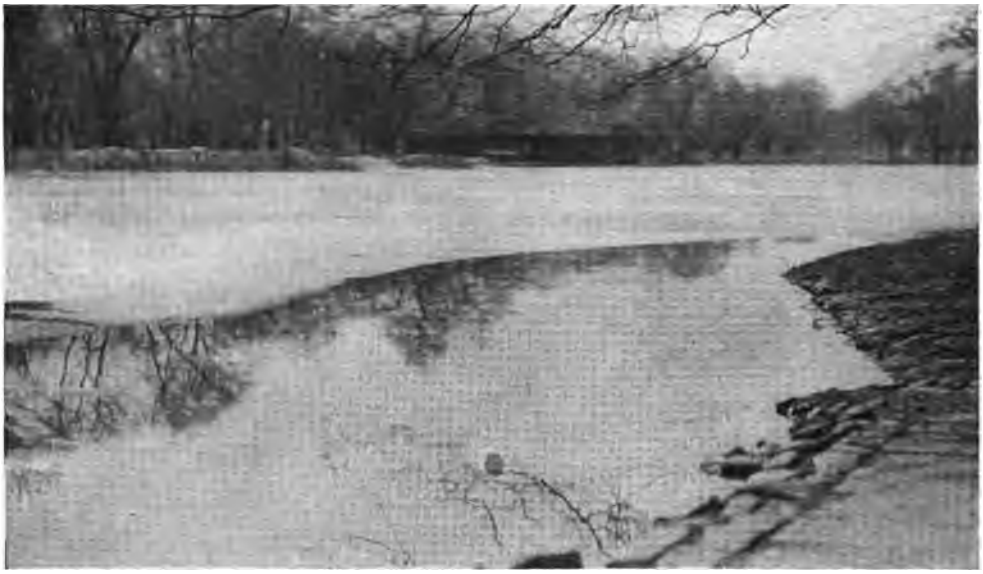
These difficulties were finally overcome and an ideal printing box was obtained, the cost of which was far below the larger ones on the market claiming equal advantages. I first removed the sockets for both white and red lights and attached to the sliding carrier a ½" board 4" wide and 5½" long, in such manner that the left edge just cleared the side



of the box when the carrier was in the farthest "left" position, and the end of the board cleared the end of the box when carrier was in the farthest "forward" position.

Next I purchased, at a nearby electrical store, 5 "baby receptacles" and 5 frosted 15-watt nitrogen candelabra globes. Attaching the sockets to the board in the manner shown, I wired them together. Don't make the mistake of wiring the sockets "in series" (i. e. positive to negative and positive to negative) as the lamps will act as resistance coils, cutting down the light to a point of utter uselessness. Wire them so that all positive and all negative sides will be on unbroken wires. When the globes are placed in the box they will clear the wires on the left, if the insulators are bent to an *up* position instead of *down*. The red globe socket may then be attached to the upper right hand side of box, as near to top and back end as globe will permit.

The results of these changes were very gratifying. The box had an 80-watt light spread over the entire printing surface and nicely diffused by the frosted globes. In addition to the control afforded by the movable carrier, thin portions of negatives could be shaded by simply unscrewing the globe under that portion which printed too dark. The total cost of the change was less than $5.00. Similar changes may be made in other makes of boxes, several of which are on the market.



A MARCH THAW Wm. F. Nugent

A MARCH THAW

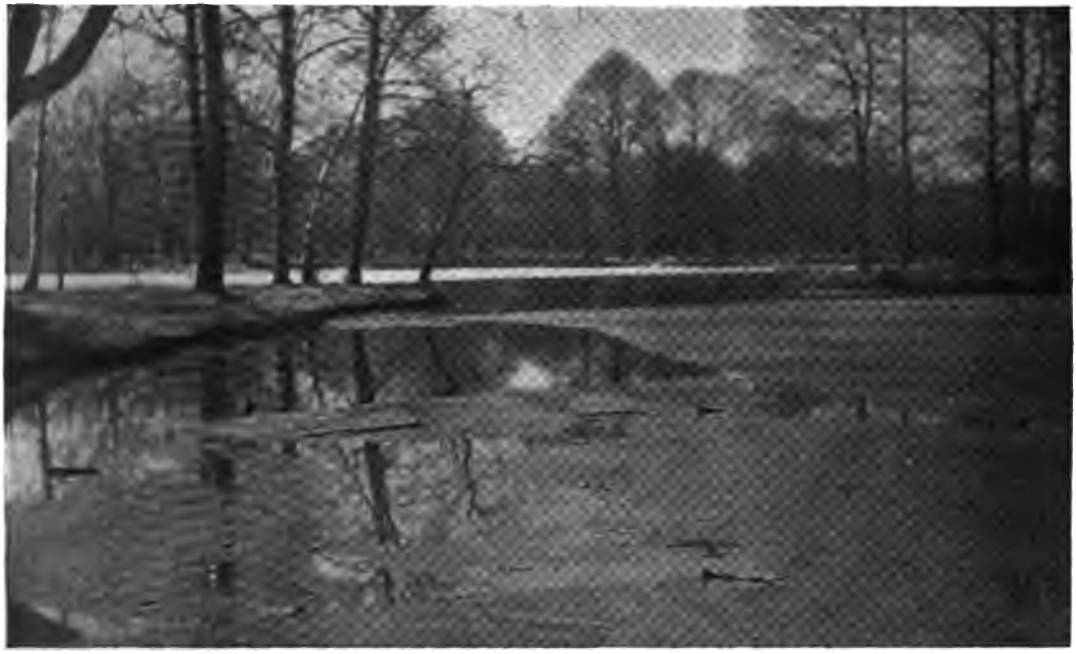
There are interesting lines in this picture, but somehow they do not hang together and are too much scattered to make an interesting pattern. The point of view was not well selected with regard to the foreground and it is unfortunate that the foreground is so much out of focus. It would have been better to have used a smaller stop and given a longer exposure with the camera on a tripod. The tone rendering is very good, owing, no doubt, to the use of the isochromatic filter, but that, by itself, is not sufficient to make the picture a success. Probably the lack of a definite point or object of interest is the reason why the picture does not make a stronger appeal. Atmospheric conditions such as are here depicted are often ideal for picture making, but in this particular case the ideal has not been reached. Made with a 3A Graflex, Bausch and Lomb Tessar lens of 7 inches' focal length, used at *f*:4.5, good light at 10 A. M. in March, two-times filter, exposure 1-10 second, Eastman Speed film, developed with pyro in a tank, enlargement on bromide paper.

MOUNTING SQUEEGEED PRINTS

Squeegeed photographic prints can be mounted very easily without losing their highly glossy surface as follows: The prints to be mounted are first placed in a tray of wood alcohol and allowed to remain in this bath for at least one half minute. They are then removed and the alcohol allowed to evaporate from the face of the print by exposing to a cold draught. The prints are now laid face down on a piece of glass and paste spread over the backs with an ordinary paste brush. The prints, placed on suitable mounts, can be pressed into contact with a rubber roller. This method is much quicker and easier than any other and does not require the expenditure of a large sum of money for costly apparatus to bring about the very same result. — James C. Weglarski.

A DAY IN MARCH

A subject of this sort is one that has not sufficient interest in itself to make it pictorial, but it is one that lends itself very well to pictorial treatment. The lines, masses and tones of such a subject often resolve themselves into an interesting and pictorially satisfying pattern or design and it is this aspect of it that appeals to the artist. In this particular instance the "pattern" has not, apparently, been considered, and it does not seem to us that the point of view was chosen with this in mind. The tones of the print are rather unnecessarily dark, due, we should imagine, to over-printing in making the



A DAY IN MARCH WM. F. NUGENT

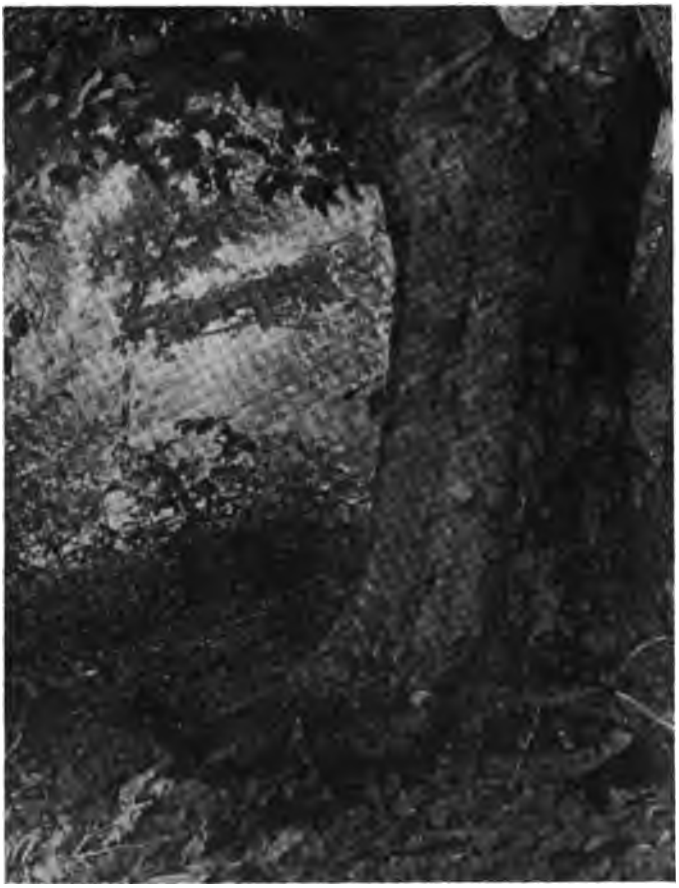
enlargement. Lighter and more delicate tones would, we think, suggest the conditions more readily. It would have been better, too, to have stopped down the lens a little and secured more depth of focus, using a tripod, if necessary, to help with the longer exposure. Some of the foreground is sharply focused but as there is nothing of any importance in the foreground, it would have been better to have allowed the definition to extend a little into the middle distance. Made in Prospect Park, N. Y., with a 3A Graflex camera, Bausch and Lomb Tessar lens used at *f*:4.5, exposure 1-10 second, K-2 filter, Eastman film, bromide enlargement.

THE USE OF REFLECTORS

There are operators who never use a reflector. They claim that reflected light destroys the modeling of the face, sets up double "catchlights" in the eyes, and adds considerably to the work of the retoucher. On the other hand, there are many who always use a reflector. These claim that it relieves the shadow side of the face, softens the contrasts and shortens the exposure. There are sound arguments on both sides; sounder arguments than those of either side, however, can be advanced by the man who knows what he wants and is determined to get it by any means possible — the man who uses a reflector when it helps him, and discards it when he can get the effects he wants without it.

LENS POSITION IN ENLARGING

We have had correspondence in the past from amateurs who ask about reversal of lens in enlarging. This reversal is necessary with unsymmetrical lenses, but through very general statements along this line, much confusion has resulted. In unsymmetrical lenses, the front lens combination is sometimes larger in diameter than the back one. In ordinary photography you know by experience that the front lens faces the object being photographed. The image is reduced in size compared to original, but in enlarging we have the back lens facing the plate whereas the front lens faces the easel with the enlarging paper. The plate being enlarged is now the object whereas the image on the easel corresponds to the plate in the camera. The confusion results from the fact that enlarging cameras are built the reverse of ordinary cameras, and when the lens is put on the lens-board the natural way, by cutting a hole in lens-board and

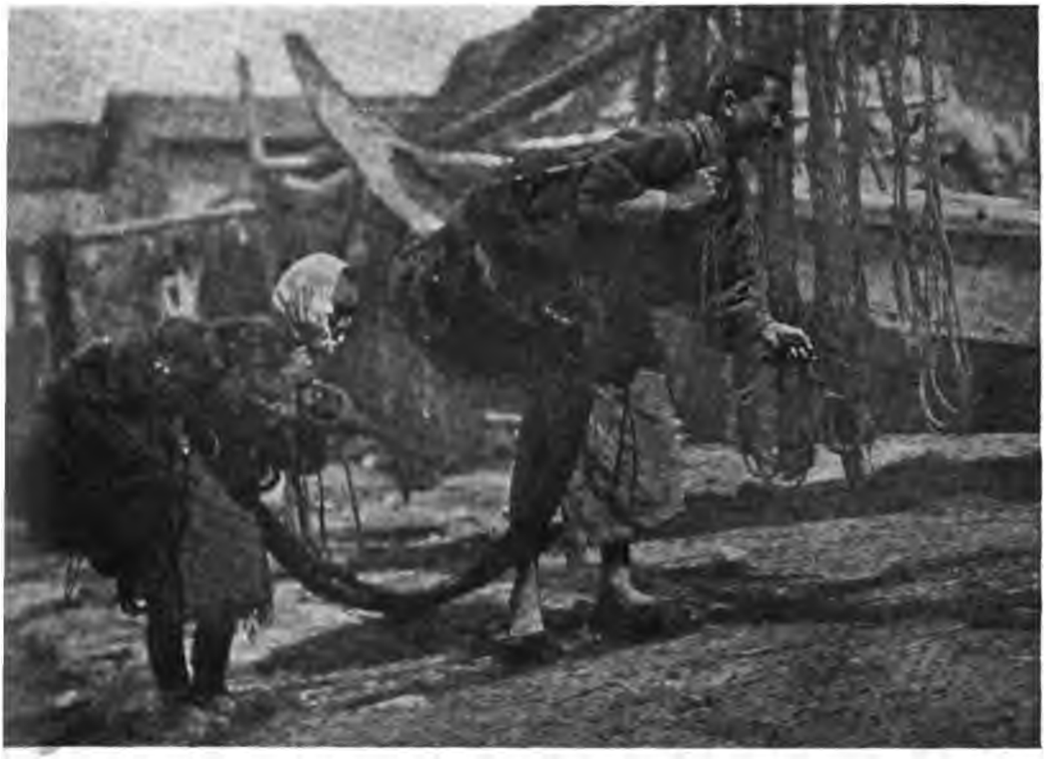


GUARDIAN OF THE TRYST Geo. W. French

attaching the flange, the lens is in the reversed position. A second reversal would put the lens in the right position. In an unsymmetrical lens, always put the cap end or larger lens combination on the same side as the longer conjugate focus. This is obviously the easel side in enlarging and facing the object being photographed in ordinary photography or copying. In copying, enlarging and reducing cameras, where the lens sometimes can be used in the middle compartment, the camera makers make the lens-board so the board itself can be reversed, so as to allow the lens to point either way.

GUARDIAN OF THE TRYST

A lover of nature and a photographer who has learned to see and appreciate the beauty of the simple subject would be the only one who would be likely to photograph the trunk of a beech tree and make a picture consisting of nothing but the tree trunk with a distant vista of sunlit foliage. Mr. French we know is not only an earnest student and lover of nature, but is also a photographer who has cultivated the "seeing eye" and it is because of this that his picture, which is an enlargement of very fine quality, is so eminently satisfying and carries out so well the idea conveyed by its title. The technical difficulties of contrast between sunlight and shadow have been overcome by the simple method of giving ample exposure in making the negative; the texture of the bark of the tree is well suggested (this is also very largely a matter of correct exposure) and the placing of the tree trunk in the picture space, in other words, the arrangement of the masses, shows that some thought has been given to this important point. Such a subject as this is one that is often overlooked by the average camera user. It is not at all striking and might easily be missed unless



IS OF A FISHER — SOTARO SABA

photographer be one who has cultivated ability to pick out simple subjects for pictures. This way, however, lies pic- al success. Made in Maine with a 2¼ x Ansco camera fitted with an Ansco stigmat lens of 4 inches focal length, used :16, sunlight at 2 P. M. in July, exposure seconds, N. C. film, developed with pyro, ırgement on P. M. C. No. 2.

SONS OF A FISHER

here is always a wealth of interesting orial subjects to be found among the mon things of everyday life and we are etimes apt to forget that things that are iliar to us through frequent association ess considerable topographical interest hose living in another part of the world. are very fortunate that we are able to oduce so many interesting pictures from gn countries as well as from unfrequented ers of our own country. The pictures we rom Japan are, as a rule, particularly in- ting because our contributors in that try possess not only the ability to select the most interesting subjects, but also the necessary technical skill to present them adequately. When the picture is in the nature of a genre study it is very important that the figures should appear natural and quite unconscious of the fact that they are being photographed. All these necessary qualifications have been met with in Mr. Sotaro Saba's picture, "Sons of a Fisher," which gives us an interesting glimpse of life on the beach in Japan. The two figures appear to be quite unconscious of the proximity of the camera; they are entirely absorbed in their work and seem to be thoroughly enjoying it. The print, a bromoil on Eastman P. M. C. bromide paper, enlarged to 6 x 8 inches from a film 2½ x 3½, shows that an attempt was made to isolate the figures from their background. This has been well done except for one place just between the two figures where the hand work is a little apparent, and the background has been very cleverly subdued. Other data are: Exposure 1-32 second, good light at 10 A. M. in April, Zeiss Tessar B, lens of 4½ inches' focal length, used at f:6.3, Eastman film pack developed with pyro-soda in a tray.

EXPECTANT CHAS. CRAIK

EXPECTANT

There is hardly any more difficult subject for a photographer than a kitten. To get two in the same picture and both of them good is a highly meritorious achievement. Certainly such kittens as Mr. Craik has selected for his subjects are cute enough to be worth the expenditure of considerable trouble. Technically this picture is quite successful, though we think a little might well be trimmed off the top of the print. Made with a 5 x 7 view camera, Wollensak R. R. lens of 8½ inches' focal length, stopped to *f*:11, exposure 1-10th second, fair light at 6 P. M. in July, Royal Polychrome plate developed with metol-hydrochinon, enlargement on Wellington Smooth Plat. Bromide paper.

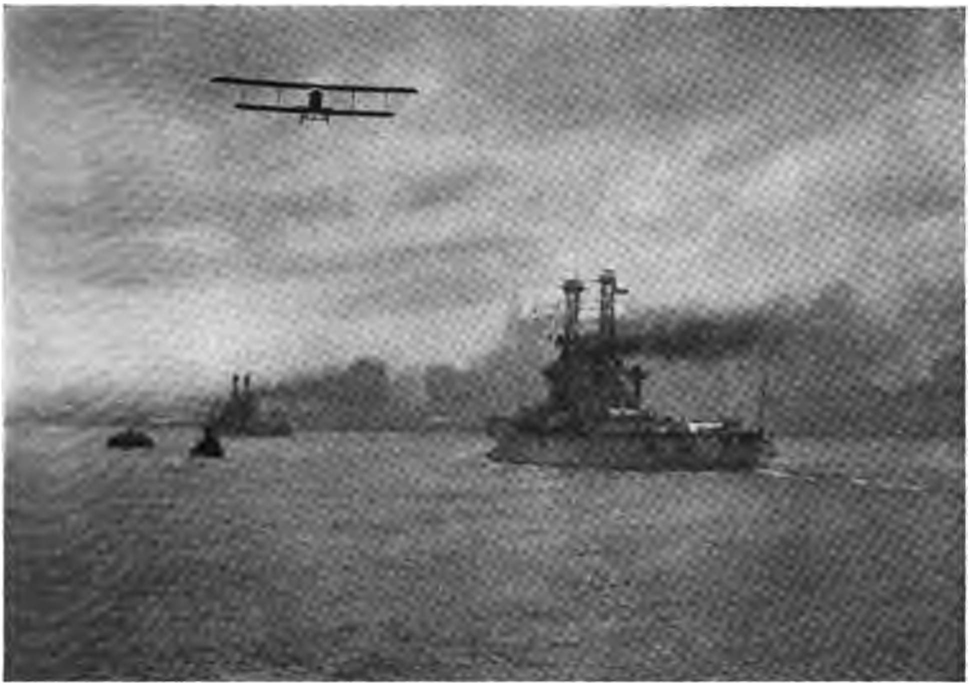
DEVELOPING SMALL ROLL FILMS

Roll film is the most popular negative medium for small cameras, and developing these minute negatives without risk of mechanical damage is not an easy matter, though the worker may have been used to handling film in the larger sizes. Though tank development is often advocated as ideal for this class of negative, we have found many amateurs do not care to incur the expense of a tank, while the professional worker often finds the cost of tank apparatus for amateur finishing is hardly worth while, when he has only to develop an occasional spool or two. We have developed hundreds of small roll film negatives in the following simple manner: — The film is attached by a drawing pin at the end to the top of a circular block of wood, about four inches long by about three and a half in diameter, wound spiral fashion round the block and fastened at the other end in the same way, the sensitive side of the film, of course, being outwards. The whole is then placed in an ordinary two-pound stone jam jar, containing the required amount of dilute developer, an old weight being placed upon the block to keep it submerged. When development is complete the film may be attached in the same way to another block of wood and placed in another jar for fixing. It is as well to mark the jars, or two of a different shape may be chosen in order to avoid changing them about, or the film may be fixed in a large dish in the ordinary way. This method has the advantage that only a small quantity of developer is required. If thought necessary, the wood may be rendered waterproof by one of the well-known methods, such as saturating the surface of the wood with paraffin wax. — *B. J.*

PHOSPHORESCENCE OF PHOTO PLATES

Phosphorescence is the term applied to some luminous bodies, such as luminous paints, etc., which phosphoresce, or glow after they have been exposed to a source of light, and the source of light then removed. Phosphorescence has been noted in decaying fish, wood in swamps, and in certain sea animals. It has been noticed that photographic plates are subject to this mysterious form of light, and practical demonstrations can be made on bromide plates in the dark room.

Take an unexposed bromide plate and place it in a pyro-soda developer for about 10 minutes, remove and wash it in cold water. Extinguish the ruby lamp, and suddenly plunge the unexposed and developer-immersed plate into a saturated solution



ATLANTIC FLEET ENTERING NEW YORK HARBOR A. F. FRANCE

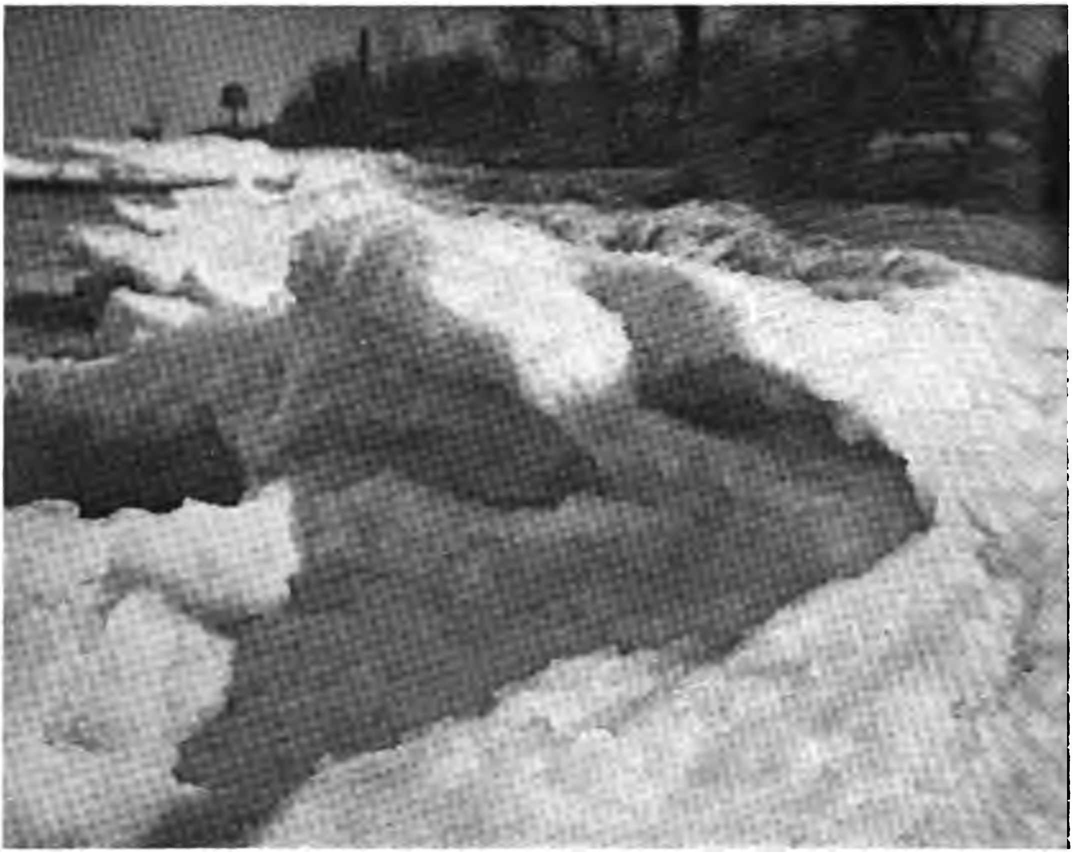
of aluminum sulphate. The plate will immediately phosphoresce with a peculiar characteristic glow, and after a time, the aluminum sulphate solution will phosphoresce itself, although to a lesser degree than the plate. The phosphorescence is not everlasting and soon dies out. If the solution is poured off into a bottle, it will phosphoresce for some time. If an exposed plate be used, the image will appear normal, and the background will show up in the weird phosphorescent light. If a pyro-soda developer be mixed with a saturated solution of aluminum sulphate a phosphoresence will be observed. The saturated solution of aluminum sulphate can be made by dissolving as much of the salt as is possible, in water, by the aid of heat. Crystals of the aluminum sulphate should remain at the bottom of the solution when it cools. — R. B. Wailes.

DEXTRINE MOUNTANT

Here is a formula for a good dextrine mountant: Best white dextrine, 2¾ pounds; water 80 ounces; oil of wintergreen, 15 minims; oil of cloves ,15 minims. Mix the dextrine into a thick cream with a little of the cold water, taking care to break up all lumps. When this is done, heat the remainder of the water to 180° F., add it slowly to the mixture, stirring vigorously all the time. This should make a perfectly smooth, transparent liquid which should be kept hot, very nearly at boiling point, for ten minutes. After this add the oils and pour into pots.— *Professional Photographer.*

THE ATLANTIC FLEET

There is always a double interest in a good picture of this type; there is the topographical interest in the subject and location and the purely aesthetic interest in the pictorial treatment of the subject. Either one of these alone is enough to make a picture interesting, and the two together strengthen the interest very much. Mr. France sends us many good pictures of this type, all of them exceedingly interesting in their subjects. His mastery of photographic technique enables him in nearly every instance to increase the interest in his pictures by giving us an opportunity to enjoy the fine tones, the well arranged masses and the good pictorial composition that all his prints display to a very marked extent.



ICE-BOUND SHORE JAMES ALLAN

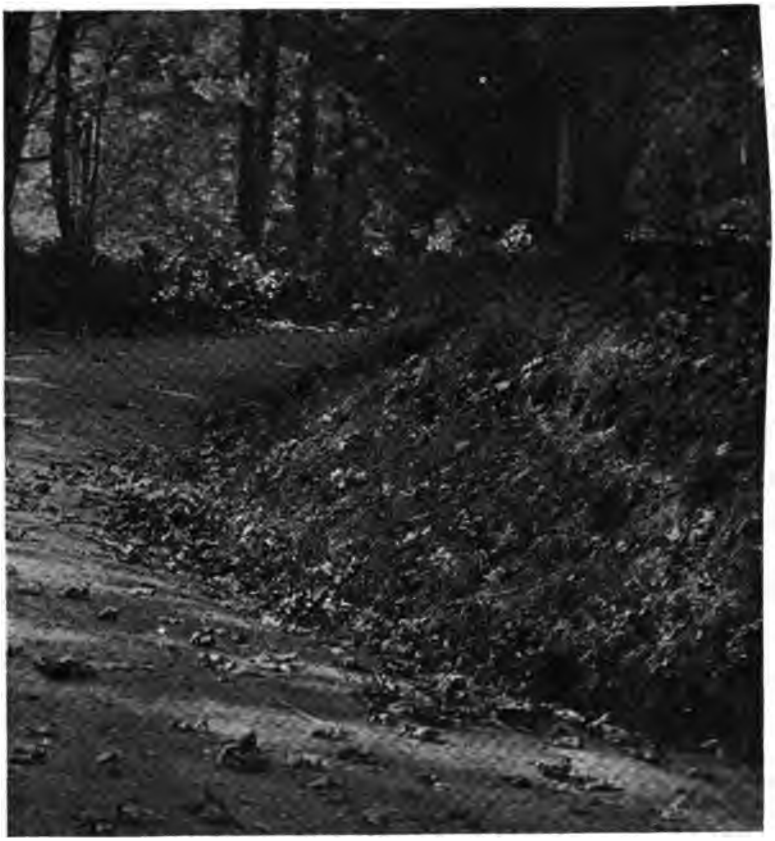
In "The Atlantic Fleet" the tones in the water, the sky and the distant buildings are very good and the triangular arrangement of the objects with the aeroplane at the apex is exceedingly interesting. Made in New York harbor with a 4 x 5 Graflex, Ic Tessar lens of 6 inches' focal length, stop *f*:11, bright light, July, A. M., exposure 1-300 second, Graflex plate developed with pyro-metol, enlargement on P. M. C. Bromide.

BROMIDE HINTS

We have occasionally seen people attempting to develop bromide paper in ruby light. This is unnecessary and you cannot see the gradations of print. Use an orange light. The safe lights put out by Eastman Kodak Co. will give a flood of light, perfectly safe, in which you can work with comfort. For negatives with excessive contrast use a rapid paper, for flat negatives a contrasty hard paper is required. Rough papers give more breadth of treatment, suppress minute details, and better lend themselves to atmospheric effects, than smoother surfaces. Warm toned papers are better for prints to be toned or redeveloped. Very rough papers are not good for small prints. Prolonged exposure reduces contrasts, shortening exposure gives snappier prints. Prolonging development tends to accentuate contrasts, with danger of staining prints. Shortening development gives softer prints. Dilute developer slows action. For soft misty effects give full exposure and dilute developer. For bright sun effects, sparkling contrast, reduce exposure to minimum and prolong development. Introducing bromide or other restrainers early in development tends to emphasize contrasts.

ICE-BOUND SHORE

There is a fine suggestion of transparency in the ice in the foreground of this picture;



IN SEPTEMBER DR. L. BROE

it glistens and sparkles with the utmost realism. It is very interesting to consider that this illusion is produced simply by the truthful reproduction of the tones in the subject, the tones being translated into shades of grey in the picture. They are so nearly right that they suggest the color of the snowy ice very strongly. There are interesting lines and decorative masses as well as good tones and these all combine to make this picture one of the most successful snow scenes we have seen for some considerable time. Made with a 4 x 5 Reflex camera, Goerz Celor lens of 7 inches' focal length, used at U. S. 11, bright light in March, Orthonon plate, exposure 1-30th second, enlargement on Artura Carbon Black Rough Matte.

WHERE TO FOCUS

Where shall we focus when we have a short range picture to make, of some small object. Multiply the nearer distance required to be sharp by the farther distance and double it, and divide result by sum of the distances. This gives the distance from the camera to the point to focus on. If you have an object three feet long with its nearest point three feet away, we figure 2 x 3 x 6 or 36 divided by 9. Focus on four feet, that is, one foot beyond the near point. When the lens is stopped down, the near and far points come into focus at the same time.

IN SEPTEMBER

It is interesting to see in this picture a deliberate attempt to produce an interesting line composition. The picture as submitted to us is an enlargement from a part only of the entire negative, and in selecting the part to enlarge or in trimming the enlargement after it was made, the maker of the picture must have had some reason for making the selection he did. This may have been wholly instinctive; the maker of the picture may have trimmed it as he did just because he thought it "looked right" that way, or he may have seen the definite S-shaped curve running through the picture. Dr. Broe, on the criticism slip which he encloses with the print, states that his reason for taking the picture was "to express the charm of autumn" and in this respect we think he has been eminently successful. The print is one of good color and the technical handling throughout is without fault. Made in Vancouver, B. C., with R. B. Cycle Graphic camera, size 5 x 7, R. R. lens, *f*:8, eight-times filter, bright, sunny afternoon, 3 P. M. in September, exposure 2 seconds, Eastman film pack developed with Eastman Powders in tank, enlargement from part of the negative on Eastman Velvet Bromide.

Jan 11th, 1922

AMERICAN PHOTOGRAPHY,
428 Newbury St.,
Boston 17, Mass.

Gentlemen: —

In the June issue of American Photography you most kindly published an article concerning the writer, by Mr. Arthur H. Farrow, entitled "A Plea for a Shut-in." I ought, and greatly desired, to have written you before, but it was physically impossible. In addition to my other troubles, involving constant and much of the time intense suffering, on the 28th of May, last, was seized with a most violent attack of sciatica, which persisted until the last of November, 1921. There were three periods, of 72 hours each, in which I did not close my eyes, my sufferings were so intense. It was thought that I could not survive, the pain was so great, and I grew so weak, but thanks be unto our Heavenly Father, I pulled through.

I want to thank you, for your kindness, in publishing that article. Words cannot express the pleasure and happiness, it brought to me. It came as a complete surprise. The latter part of May, a package of prints, came to me from Alabama. I did not understand it. Next day, came one from Maine, then followed Ohio, N. Carolina and Massachusetts in quick succession. Along the 5th or 6th of June, came my copy of AMERICAN PHOTOGRAPHY, and the mystery was explained. Although I could not sit up in bed, from the last of May, until the last of November, Mrs. Stevens showed them all to me, as they came in.

It may interest you to know the result of that kindly article. From more than 40 photographers — both amateur and professional — living in 18 States, as well as Canada and Cuba, I received something over 500 prints. The smallest number I received from any person, was one; the largest, seventy-five. The latter were all 1⅝ x 2½. Among the prints sent, were quite a number of enlargements, some of them exceedingly fine, all of them good. They ran in size, up to 11 x 14. I think this is a most remarkable record, and I do not know of any other magazine, which would have brought forth such a splendid response. Again, I thank you.

Thanking you again, for your kindness, for the many hours of happiness which you have, and will continue to give me, I am, believe me,

Yours most sincerely,
GEO. REED STEVENS

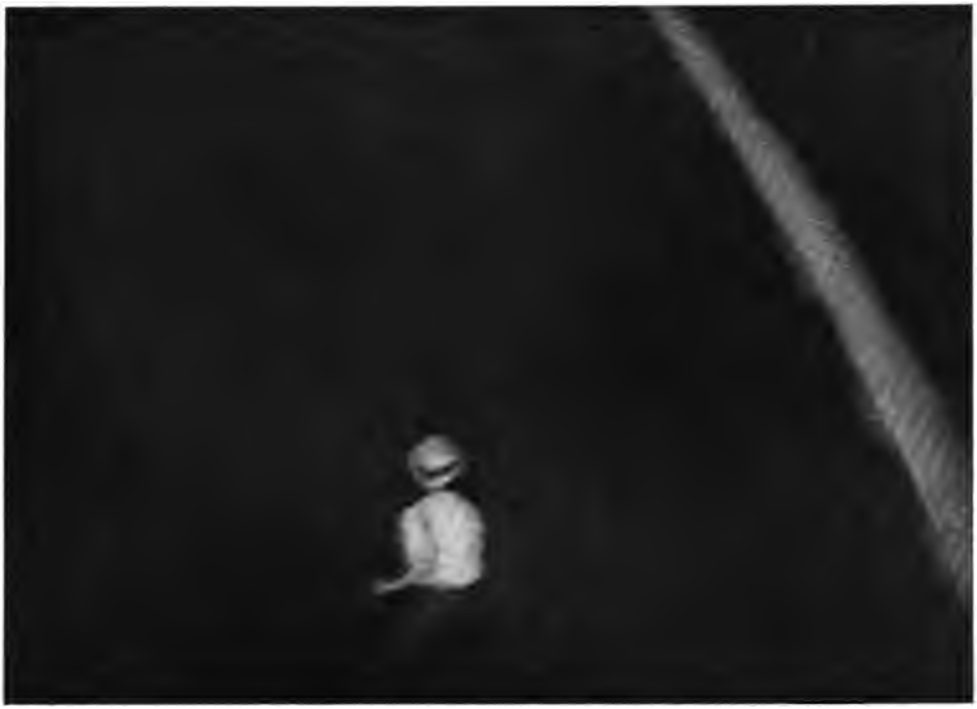
SUBSTITUTE STUNTS

Frequently, if traveling, or even at home, we have occasion to use some implement or equipment that is not at hand — and sometimes an improvised substitute will do the work about as well, temporarily, when necessity is the mother of invention. I pass along a few of the stunts I have resorted to from time to time, hoping they will suggest a way out to somebody, sometime.

A STRAINER — Having some dirt in my solutions, I wanted to strain them, but had no strainer, and no old cloth to use. Taking a length of ordinary white string, such as is used on small bundles, I bunched it up loosely and packed it, loosely, into a funnel. Pouring the solutions through this strained it just as well as a fine strainer. (Of course, I was careful to wash my string after straining one solution, before using it on another. This because I had at the time only one piece of string).

A FUNNEL — Of course anybody can form a cornucopia out of a piece of paper; but sometimes it is difficult to find a means of holding it closed. I have at times taken an ordinary envelope and torn out a small hole from one corner. Inserting this into the bottle mouth, it acted very well as a makeshift funnel.

A SUBDUED LIGHT FOR HANDLING SENSITIVE PAPER — Sometimes, when traveling, I could not get a red lamp, or adapt a darkroom to work in, when printing. I have found that where there is electric light, it gives just about the right light for handling



CELEBRATING THE FOURTH J. A. SINGLER

ordinary papers, if an ordinary paper bag laced over a single bulb, with the top of bag pressed and folded tight onto the ket. (Care should be taken to see that bag does not touch the glass bulb, or it ht take fire). This is safe enough for all inary papers, and possibly two bags, one r the other, would be safe enough for thing but plates or film.

PRINTING FRAME — I broke a printing ne up in the country once, — and being ious to do some printing at once, I im- vised a frame this way: Taking two ts of window glass, I cut them to the e size. Then I took some adhesive , 1 inch wide, and fastened the two ts of glass together on one long edge, forming a hinge. In this I was able old my film and printing paper fairly , — and certainly had more fun out of pictures than if I had waited to get a printing frame. This could also be for plates, — if allowance for the ness of the plate is made when fas- ng the two sheets of glass together.

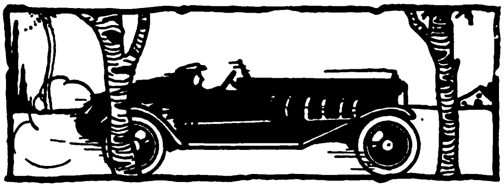
SUBSTITUTE FOR FILM DRYING CLIPS — I had nothing in the nature of a clip to a roll of film while drying, and did not to use a pin on the wall, for fear of the film touching the wall. I found some wire handy, and bent this up into a letter S, sticking one end through the film at the end, while the other hook was suspended from the gas-jet. This placed the film where nothing could strike it, and where the air could circulate freely about it.—W. L. WRAY.

CELEBRATING THE FOURTH

The simplicity of this picture makes it very interesting and striking. It certainly is most unusual. From the point of view of pictorial composition we think it would have improved the arrangement very much if an inch or a little more than an inch had been masked off in making the enlargement, so that the figure would have been brought nearer to the left hand margin. The streak of the rocket and the rather apprehensive attitude of the figure are sufficient to tell the story very convincingly. Made by flash-light at 9. P. M. in July, Ansco 4 x 5 camera, Eastman film.

OVERWORKING THE DEVELOPER

Professionals need reminding, in these days of economy, that they cannot keep down expenses by overworking their developers in bromide printing.



THE PHOTOGRAPHIC REVIEW

E. J. WALL, F. C. S., F. R. P. S.

A NEW ELEMENT. — Eder has submitted to the Vienna Academy of Sciences some spectrograms of terbium, one of the rare earths occurring with cerium, etc. Auer von Welsbach prepared the earths of gadolinium, terbium and dysprosium in very pur. state by fractionation from the Swedish mineral gadolinite, and no new element was found in the fractions between gadolinium and dysprosium; but between the latter and terbium a whole series of new spectral lines were discovered, which Eder considers to be due to an hitherto undiscovered element, which he has named Welsium in honor of Welsbach. The wave-lengths have been photographed from the extreme red to the ultra-violet, and definitely measured (*Phot. Korr.*, 1920, **57**, 254).

COPPER INTENSIFICATION WITH SILVER OXALATE.– R. Namias states that the usual method of blackening the image by means of silver nitrate after bleaching with cupric bromide is only satisfactory with collodion films, as with gelatine stains are very likely to occur. He proposes, therefore, that silver oxalate should be used. To prepare this 5 g silver nitrate are mixed in solution with 3 g neutral potassium oxalate and the silver oxalate allowed to settle down, the water decanted or siphoned off, and the precipitate suspended in 500 ccm water. This turbid liquid is well shaken and poured over the negative, which rapidly blackens. Silver oxalate is practically insoluble in water (about 1:30,000) but the minute traces are sufficient to give good intensification. The process is applicable to paper as well as plates; subsequent fixation in 10% hypo to remove the silver bromide and oxalate is advisable (*Il Progesso Foto.*, 1915, 48; *Phot. Korr.*, 1920, **57**, 188).

DI-HYDROXY-HEXA-METHYLEN-TRISULPHITE OF SODA. — W. Fuchs & B. Eisner state that 1 molecule of hydrochinon combines with 3 molecules of sodium bisulphite to give the above compound, which is a good developer (*Ber.*, 1919, 2281). This means 110 g hydrochinon and 312 g bisulphite.

THE ACTION OF LIGHT ON SILVER BROMIDE. —W. Ehlers & P. Koch precipitated silver bromide in aqueous solutions and collected the flocculent precipitate and found that it had the mean diameter of 4 microns (thousandths of a millimeter). An Ehrenhaft-Milliken balance was used, with which extremely small weights can be determined. Exposure was made by blue light behind a 80 cm cupric sulphate filter, and it was found that when the exposure was made in air the weight of grains was practically constant or there was a very slight but unmistakable increase to a few per cent. When exposed in nitrogen there was a marked decrease in weight with the larger grains from 1.5 to 5%, with the smaller grains up to 10%. The assumption is that in the exposure in oxygen-free gas there was an evolution of bromine, and that this evolution of bromine in oxygen-containing gases was accompanied with absorption of oxygen. The loss of bromine was 1.5×10^{-22} per grain, that is about 1 bromine atom (*Zeits. f. Phys.*, 1920, 169).

SENSITIZING LEATHER, FABRICS, ETC. — A. Cobenzl gives the following methods of preparing sensitive surfaces on leather, wood and fabrics of all kinds, and states that he has used these methods commercially for about 15 years with success. The novelty in some of them is in the use of soluble starch, which must be free from dextrine or unconverted starch.

Ammonium chloride	20 g
Gelatine	5 g
Water	800 ccm

Soak the gelatine in water and melt by heat, then add the ammonium chloride, and add the whole to:

Soluble starch	20 g
Water	200 ccm

The material should be immersed in this till soaked and then hung up to dry; if the fabric is thick and soaks up much of the liquid, then more water should be added. When dry it is silvered on:

Silver nitrate	205 g
Citric acid	103 g
Distilled water to	1000 ccm

If exposed to light this solution deposits crystals of silver citrate and silver oxide. As immersion of each piece of material removes some silver, it is advisable to strengthen the bath with a 25% solution of silver nitrate. A glass or hard rubber rod should be placed in the dish on top of the material and rolled to and fro; this saturates the cloth with the solution and prevents touching with the fingers. Artificial light should be used, and drying should be rapidly carried out in the dark. Cotton goods thus treated do not keep well, sateen keeps better while linen, taffeta and satin keep well. After printing, the material should be washed with water till it is no longer milky and then treated with about 3% salt solution with a little ammonia added, and toned with gold or platinum.

For long pieces of cloth it is advisable to run them through the household wringer, the rollers of which should be covered with clean cloth; this may be adopted after salting and silvering. (What the housewife would say to the use of her wringer for silver solution is not disclosed.)

Thin veneer wood can be sensitized; maple and plane wood give the best results; pear is less satisfactory. The wood should be immersed for at least 5 minutes in the following:

Soft gelatine	30 g
Water	800 ccm

Soak, melt by heat and add:

Formaldehyde	5-10 ccm

Dry with moderate heat and immerse for the same time in:

Hard gelatine	10 g
Soluble starch	40 g
Hot water	400 ccm
Ammonium chloride	2 g

Again dry; then sensitize in

Silver nitrate	100 g
Citric acid	83 g
Distilled water	1000 ccm

Dry quickly. Print deeply from contrasty negatives, wash, tone in a borax gold bath, fix and wash well.

The sensitizing of leather, split calfskin being the best, is not such an easy matter. It does not keep well after sensitizing, but after printing and fixing will keep; Cobenzl says that he has kept some pictures for over 20 years. The leather should be stretched in a frame and saturated with a 1-3% collodion, from the hair side, dried and then coated with the following collodio-chloride emulsion:

Calcium chloride	2.1 g
Lithium chloride	1.6 g
Distilled water	8 ccm
Alcohol	17.0 ccm

Dissolve by heat and add to:

Collodion 4%	720 ccm

Then add the following warm solution:

Silver nitrate	25 g
Distilled water	25 ccm
Alcohol	70 ccm

Finally add:

Citric acid	8.4 g
Glycerine	4.2 g
Castor oil	0.4 g
Alcohol	47 ccm

Shake well and allow to stand for 24 hours in a warm place to ripen, then coat the leather.

Instead of using the printing-out emulsion given above, the following for acid development may be used for cloth, etc.:

Hard gelatine	2.5 g
Soluble starch	10 g
Potassium bromide	8.75 g
Cadmium bromide	8.75 g
Cadmium iodide	2.5 g
Ammonium chloride	2.5 g
Water	1000 ccm

Saturate the material and dry quickly, then immerse in:

Silver nitrate	40 g
Citric acid	50 g
Distilled water	1000 ccm

Clean brilliant negatives, with short exposures to a bright light are required; enlargements may also be made. After exposure the material should be immersed in a 5% solution of ammonium chloride and developed with:

Pyrogallol	2.5 g
Hydrochinon	7.5 g
Citric acid	10 g
Sodium sulphite, dry	34 g
Water	1000 ccm

Temperature 30° - 40° C. As soon as the image has well appeared, fix in an acid bath, wash and dry. Tone with gold.

For an emulsion for similar materials Cobenzl recommends the following:

Hard gelatine	120 g
Water	1300 ccm

Dissolve and add:

Zinc bromide cryst	43 g
Cadmium iodide	1 g
Cadmium chloride	3 g

Next add at 70° C.:

Alcohol	500 ccm

Then add

Silver nitrate	50 g
Distilled water	100 ccm

Finally add:

Alcohol	100 ccm

Digest for 2½ hours at 80° C., and stir well till the temperature of the emulsion sinks to 15° C., when the silver bromide emulsion will sink to the bottom; this should be collected and washed, and then melted with the addition of:

Sodium carbonate	0.2 g
Ammonium bromide	0.2 g
Water	2400 ccm

Melt at 30° C., and saturate the cloth with the hot emulsion. This can also be used for paper. It will give from black to red tones with long exposures and correspondingly diluted developer. Another formula for a gelatine emulsion is as follows:

Hard gelatine	420 g
Water	2000 ccm
Ammonium bromide	55 g
Potassium bromide	55 g
Potassium iodide	3 g
Hydrochloric acid	0.5 ccm

Dissolve by heat, and add:

Silver nitrate	78 g
Distilled water	450 ccm
Ammonia	q. s.

Dissolve the silver and add enough ammonia to form a clear solution; stir the emulsion while adding the silver, then add:

Silver nitrate	78 g
Distilled water	450 ccm

Allow to stand at 40° C., the mixing temperature, for 30 minutes, then cool down quickly; break up and wash as usual the next day till all smell of ammonia has disappeared, then drain, melt and add:

Rice starch	150 g
Water	300 ccm
Chrome alum	5 g

Rub the starch into a smooth cream with the water, and add enough water to the emulsion to make 5000 ccm in all. The material may be drawn through the hot emulsion and hung up to dry. This gives good clean black and white prints, and may be used for paper (*Phot. Korr.*, 1921, **58**, 1).

A NEW PRESERVATIVE FOR DEVELOPERS.—J. Desalme has proposed a solution of tartrate of sodium and tin as a preservative for developers and gives the following method of making this:—

Stannous chloride	5 g
Tartaric acid	7 g
Boiling water	30-40 ccm

To this add the following solution

Sodium carbonate, dry	11 g
Warm water	30 ccm

The mixture should be distinctly alkaline to litmus paper. Usually a white precipitate forms, due to impurities, and the bulk should be made up to 100 ccm by the addition of water, and filtered. This solution would seem to be extremely useful, as it instantly removes ink stains or rust, and the addition of a few drops of this to a deeply stained developer instantly decolorizes it. The following developer is suggested as being comparable to hydramine and giving excellent results:

Paramidophenol (base)	10 g
Hydrochinon	10 g
Caustic soda solution, 40° Beaumé	22 ccm
Water	200 ccm

and immediately add

Sodium bisulphite lye	50 ccm
Sodium carbonate, dry	17.5 g
Water	50 ccm

then add

Solution of stannous tartrate	100 ccm
Water to	1000 ccm

For use this should be diluted with from 4 to 6 times its volume of water. Some developer made up as above has been kept in half-filled bottles since 1912, and in April 1921 was as active as at first. The tin solution is an excellent preservative of amidol also, but for this it must be slightly acidulated by the addition of sodium bisulphite till it reddens blue litmus paper. Three cubic centimeters of the solution should be added to the amidol developer as diluted for use. A stock solution can be made up by dissolving 15 g of amidol in 800 ccm water, adding 45 to 60 g anhydrous sodium sulphite and 100 ccm of the stannous tartrate solution and making the bulk up to 1000 ccm. For use this should be diluted with twice its volume of water (*Bull. Soc. Franc. Phot.*, 1921; *Rev. Franc. Phot.*, 1921, **2**, 128; abst. *J. S. C. I.*, 1921, **40**, 529A). The soda lye of 40° Beaumé contains 483 g caustic soda per liter, therefore the quantity given is equal to 10.6 g dry caustic soda. The bisulphite lye is the commercial bisulfite solution. This preservative deserves attention, particularly by those who use amidol, as there has been no good preservative for amidol, which loses its developing power in about three days when made into a stock solution. In a later communication Desalme gives a slightly improved method of making the stannous solution, thus: dissolve 10 g stannous chloride and 15 g tartaric acid in 50 ccm warm water, add to 25 g sodium carbonate dissolved in 250 ccm water, and then make up to 1000 ccm (*Rev. Sci. Phot.*, 1921, **2**, 130).

Chlorising or Bromising the Silver Images by the Aid of Quinone. — Lumière & Seyewetz have suggested that quinone in conjunction with the halogen acids will convert the silver image into the corresponding halide, according to the following equation: —

$$C_6H_4O_2 + 2HCl + Ag_2 = C_6H_4(OH)_2 + AgCl$$

or

$$C_6H_4O_2 + 2NaCl + H_2SO_4 + Ag_2 = C_6H_4(OH)_2 + 2AgCl + Na_2SO_4.$$

and they give the following baths as representing these equations: —

Quinone	5 g
Sodium chloride	6 g
Sulphuric acid	3 g
Water	1000 ccm

Potassium bromide (11 g) may be used in place of the chloride if the image is to be bromised. The halide images can be used for any of the usual processes, such as sulphide toning, redevelopment with a developer for obtaining warm tones, reduction of the dense parts by partial development and fixation.

Hitherto the usual methods of obtaining the halide images have been the use of either chlorine or bromine water, hypochlorites or hypobromites, in which case nothing but the silver halides are formed; the use of ferric and ceric salts, which are reduced to the -ous state, the later salts not forming part of the images; the use of compounds in which the lower salts form part of the image, such as cupric and mercuric halides and chlorochromate of potash. Other baths are those in which the halogen acids or compounds are used with oxidizing bodies, such as bichromates, chromic acid, permanganates, persulphates or ferricyanides. This is the first time that an organic compound has been used for replacement of the halogens (*Bull. Soc. Franc. Phot.*, 1920, **62**, 267; *Brit. J. Phot.*, 1921, **68**, 6).

A Cobalt-Iron Printing Process. — J. Burian has worked out a printing process based on the use of the oxalates of cobalt and iron, which may interest some, though it is apparently more suitable for line work. The manufacture of the salts is dealt with in detail, but this presents no particular difficulty. The cobaltic ammonium oxalate is prepared as follows: in a beaker place 8 g oxalic acid, pure cryst., and 30 ccm distilled water, heat till dissolved, then add 24 g neutral ammonium oxalate and when dissolved 8 g dry cobalt carbonate; effervescence takes place, due to the evolution of carbon dioxide. The mixture should be digested on the water bath till it turns red, about the color of raspberry vinegar, and then cooled to 35° to 40° C., and 5 g lead peroxide added (brown lead oxide PbO_2) and 2 to 3 ccm glacial acetic acid; the color turns green in a few minutes, and on shaking, a deep green color is formed. From now on the work must be carried on by yellow light. Add 5 g more lead peroxide and 3 ccm acetic acid and after 15 minutes filter the solution and pour out into a large flat dish to crystallize, which may take from 24 to 48 hours. When the water has evaporated and the crystals formed, add 10 ccm distilled water and rock the dish and pour off the solution; repeat this till about 80 ccm of liquid are obtained, then filter and make the bulk up to 100 ccm. If cobalt carbonate cannot be obtained, it can be readily made by adding sodium carbonate to any soluble cobalt salt.

The iron salt is ferric oxalate and can be made by dissolving the ferric hydroxide obtained from 20 g ferric sulphate by precipitation with ammonia; after this has been washed it should be mixed with 80 ccm distilled water and 36 g acid ammonium oxalate. This can be made by adding about 30 ccm ammonia to 100 g oxalic acid, gently heating and adding more ammonia till the liquid smells distinctly; then boil to drive off excess of ammonia and add 100 g oxalic acid and heat till dissolved; then allow to cool and crystallize. More crystals can be obtained by evaporating the mother liquor and again cooling.

The actual sensitizing solution is prepared by mixing 2 parts of cobalt solution with 1 part of the iron. This should be painted on the paper with a soft brush till an even coating is obtained and then rapidly dried, when it should be of a green color. Exposure may be to electric light or daylight, and with an 8 ampere lamp at a distance of 1 meter the image will be seen as bright yellow on the green ground in about 10 minutes. Development is effected by immersion for 1 to 2 minutes in a 1 per cent solution of potassium ferricyanide, or till the unexposed parts appear white; then the print should be washed briefly, immersed in 1 per cent solution of hydrochloric acid, again washed and immersed in a 1:400 solution of sodium sulphite, till the paper appears gray, then well washed and dried, and the paper will become white. The sensitized paper will only keep about 6 hours. If pure ferric oxalate is used instead of the ammonium salt the process is suitable for ordinary negatives (*Das. Atel.*, 1921, **28**, 42, 58).

Cobalt was first suggested by A. & L. Lumière (*Jahrbuch*, 1893, **7**, 60; *Compt. Rend.*, 1893, **116**, 1361; *Bull. Soc. franç. Phot.*, 1893, **30**, 370) who used cobaltic oxalate, prepared by precipitating a cobalt salt with sodium peroxide and dissolving in oxalic acid; ferricyanide was used as developer and the image toned with sulphide or iron and other colors obtained with aniline or naphthylamine, etc. Very little attention has been paid to this subject, though various organic salts of cobalt were tried (*Brit. J. Phot.*, 1898, 1899, 1900). It would seem that there is no need to use dry cobalt carbonate; one can easily make this by adding 39 g sodium carbonate, cryst., to 16 g cobalt chloride, cryst. and washing and using damp. And with regard to the ferric oxalate, by far the better method is to use ammonium iron alum instead of the unstable and expensive ferric sulphate; dissolve 48 g of the alum n 100 ccm water by heat and add ammonia till the iquid smells, then wash the precipitate, collect and se damp.

KALLITYPE. — Valenta gives an excellent summary of data on this process. It was first suggested y Robert Hunt (*Researches on Light*, 1844, 147) and ater by J. W. Draper, and it was called "Argentoype." It was introduced commercially by W. J. Nicol in England in 1889, under the name of Kalliype (*E. P.*, 5,374, 1889; 7,312, 1891) and was also ntroduced in France by Boivin under the name of "Simili-Platinpapier." These papers were developed vith Rochelle salts and borax, or citrates and tarrates. Mallmann (Phot. *Korr.*, 1892, 398) used otassium oxalate with addition of a little bichronate as a developer, the latter giving more contrast n the prints. Namias (*Bull. Belge*, 1903, 512) ecommended a sensitizer of ferric oxalate 20 g, xalic acid 18 g, gelatine 5 g in 100 ccm water and evelopment with 2 per cent solution of nitrate of lver and treatment with 8 per cent oxalic acid olution. Thompson (*Phot. Chron.*, 1905, 47) gave complicated formula containing ferric-ammonium itrate 13, ferric oxalate 8, potassium oxalate 8, upric chloride 4, oxalic acid 2.5, gum arabic 6, ater 250 and applied silver nitrate 9.6, oxalic acid .4, citric acid 3.8, water 75; development being fected with water and subsequent fixing. Van oo (*Phot. Mitt.*, 1907, 169) used ferric oxalate 15, xalic acid 3, silver nitrate 3, water 100, and developed with borax 60, sodium phosphate 60, water 000, and toned the prints with platinum. T. Del abro obtained a patent (*D. R. P.*, 250,814, 1913; *rit. J. Phot.*, 1913, **60**, 461) for a mixture of 36 g rric oxalate, 5 oxalic acid, water 100, plus 33 parts a 16 per cent solution of silver nitrate and 10 rops of ferric chloride and 10 drops hydrochloric cid; development was to be effected with sodium potassium oxalate with subsequent treatment ith oxalic acid. A. J. Jarman (*Camera*, 1914; *hot. Woch.*, 1914, 325) recommended for trans- arency work, gelatine 2, silver nitrate 2.6, tartaric cid 2.6, ferric ammonium citrate 13, water 120, nd potassium oxalate 42, sodium phosphate 1.8, ater 300 as developer. Valenta points out that it impossible to make so strong a solution as Del abro suggests and says that the normal ferric alate solution, as used for platinotype, should be nployed. The preparation of the paper is very nple and 40 ccm should be allowed for 3000 square n of paper (*Das Atel.*, 1920, **27**, 10).

Valenta omits mention of *Photominiature No. 47* which J. H. Hall treats of this process. The rmal ferric oxalate solution he mentions is made precipitating ferric hydroxide from 52 g ammoum iron alum with ammonia and after washing ssolving with 21.5 g oxalic acid and making the lk to 100 ccm. This gives a 20% solution of ric oxalate with a slight excess of acid.

A NEW ROLL FILM. — The Mimosa Akt.-Gesell. Dresden has introduced a new roll film, which is parently gelatine, which is carried on a colored per to prevent halation, and is stripped after the ual operations (*Phot. Ind.*, 1921, 367).

This is probably due to the rise in price of the raw terial in Germany. Silver is 23 times higher than 1914; glass 24; gelatine 12.5; chemicals (KBr) ; boxes 19; paper 30; coal 22; wages 9. A box of x 18 cm plates cost before the war 3.50 marks, w they are 44.65.

PLATES 34 YEARS OLD. — Miethe and Stenger report that they have found a box of plates, which were made by Obernetter, probably in 1887. The sensitiveness was about 1/5 to 1/6th of the present day fast plates, but whether this had sunk or increased by keeping is not known. On exposure, images were obtained but the fog was high, about 1.13; that on a normal plate may be considered as about 0.15; the edges showed still worse fog (*Phot. Chron.*, 1921, 232).

HYDROSULPHITE AS A DEVELOPER. — A. Steigmann deals with the use of hydrosulphite of soda as a developer and finds it practically useless for ordinary work, as it causes strong dichroic fog. It may be used for physical development of gaslight papers; but, as the prints are flat, only hard, contrasty papers should be used. The developer is made as follows: to 25 ccm of a 20% hypo solution add 8 ccm of 2% silver nitrate solution and 0.5 g hydrosulphite. The prints should be given double or four times the usual exposure and immersed in the above; after about 2 minutes, white light may be turned on or daylight used, and this is advisable as it is extremely difficult to judge of the image, which is yellow. At a temperature of 18° C., development takes about 10 minutes and the print is also fixed. The yellowish-brown image is now washed and toned with sulphur, selenium, gold, etc. Good transparencies may be made in this way, as the grain of the image is extraordinarily fine (*Phot. Ind.*, 1921, 379).

The use of hydrosulphite dates back to 1886 by Eder & Pizzighelli, and it has been tried out by others, but always without any practical results. The sodium salt has the formula $Na_2S_2O_4$, and is used in the dyeing industry as a reducing agent in vat dyeing. Unfortunately it is almost impossible to obtain it free from hypo, as even when pure it rapidly decomposes into hypo. A. & L. Lumière and Seyewetz (*Jahrbuch*, 1895, **19**, 28) did find that when freshly prepared and pure it gave with plenty of bromide good results, their formula being hydrosulphite 20, potassium bromide 7, acid sulphite lye 100, water 1000 ccm. They also tested its compounds with various developing agents, amidol, diamidoresorcin, paraphenylendiamin, etc. and found in all cases that fog was caused. The hydrosulphite can be made by the action of zinc on sulphurous acid or on sodium bisulphite, but the correct way to make it pure is by the action of dry sulphurous acid on metallic sodium suspended in ether (*F. P.*, 336,942).

HYDROSULPHITE FOR SILVER RESIDUE RECOVERY. — A. Steigmann suggests also that hydrosulphite of soda is an excellent means for precipitating silver from used fixing baths. To every liter of the old bath should be added from 6 to 8 g, with an equal quantity of sodium carbonate, gradually heated to boiling till all excess of hydrosulphite is decomposed. The silver is quantitatively reduced, making about 99.85% by analysis, and the bath may be used again, as the hypo is regenerated (*Phot. Ind.*, 1921, 381).

URANIUM INTENSIFIED NEGATIVES. — Gander states that if a negative that has been intensified with uranium is required to be brought back to its original black color, it should be well washed till there is no color in the washing water and then treated to a 2 per cent solution of silver nitrate till it appears black when examined from the glass side. It can then be dealt with as a new negative (*Phot. Ind.*, 1921, 85).

A NEW COLORIMETER. — Von Hübl proposes the following fairly simple colorimeter. The color to be examined is placed at *O O* and illuminated by daylight, and its image is formed by the lens *m* and reflected by the right-angle prism to the lower half of the diaphragm *e e*, on which the eyepiece *l* is focused. At *B*, *G*, *R*, are three colors filters, which are illuminated by the light *W*, *W*, *W*, and reflected by the semi-transparent mirrors S^1, S^2, S^3, and the composite light is projected by the lens *L* on to the diaphragm *e e*, so that the two contiguous fields are seen. *K*, *kkk* are neutral wedges used to reduce the intensity of the lights. As an example of the readings obtained, a salmon colored paper was used and this gave:

19% blue + 38% green + 47% red.

As equal quantities of the three colors give white, this reading becomes:

19% white + 19% green + 28% red.

And as equal quantities of red and green make yellow the reading is:

19 white + 19 yellow + 9 red.

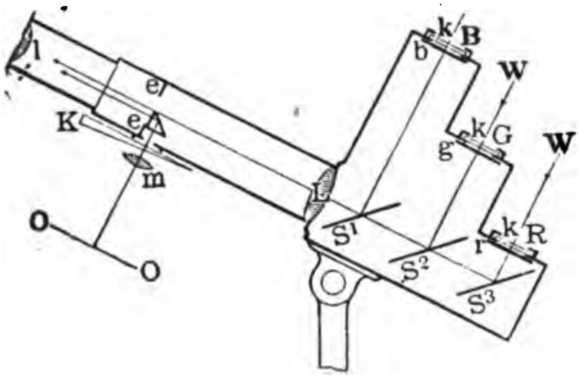


Fig. 1.

The filters are made with the following dyes: for the red, tartrazin 2 g, plus erythrosin 1 g, plus acid rhodamin 0.8 g; for the green, tartrazin 1.2 g, plus blue carmin 1 g; for the blue, blue carmin 1 g, plus acid rhodamin 2 g. The quantities of dyes are per square meter filter surface and they should be dissolved in 8% gelatine solution (*Phys. Zeits.*, 1917, **18**, 270; *Le Procédé*, 1920, **22**, 61).

This instrument is based on the original "chromometre" of Chas. Cros, described by him (*Compt. Rend.*, *Bull Soc. franç. Phot.*; *Brit. J. Phot.*, 1879, **26**, 270; *Phila. Phot.*, 1879, **16**, 90.) Cros used thin papers to reduce the quantity of light, and suggested that polarizers might be used for the same purpose. Cros also described the use of the instrument as a photochromoscope for the combination of the three constituent images, and it was thus the first photochromoscope made.

LOUDINE'S COLOR PROCESS. — In 1909 some wonderful reports as to this process were current in the German journals, though they were received generally with some doubts. Now it is again reported that the Emelka concern, which includes some of the largest moving picture film and cinematographic companies, have given Loudine a laboratory in Munich, and that he produces negatives in the complementary colors, from which any number of positives either on film or paper can be prepared (*Phot. Ind.*, 1921, 533).

A MERCURY-COPPER REDUCER. — A. Steigmann states that if a negative be bleached in a mixture of 2 g mercuric chloride and 4 g cupric chloride and then be immersed in an ordinary fixing bath it is reduced in the same way as if ammonium persulphate had been used, that is, the highlights more than the shadows. The silver chloride is dissolved and the mercurous chloride partly reduces it to metallic silver. The negative must be well washed after the bleach and before fixing (*Phot. Ind.*, 1921, 197).

A NEW PHOTOTELEGRAPHIC PROCESS. — Mr. H. Petersen, the head of the radiographic section of the Norwegian telegraph department, has invented a new method of sending pictures by wire. The picture or writing is transferred to a cylinder and made conducting, a pointer traverses the cylinder, and the current passes as this touches the image. At the receiving station a similar roller is covered with a light-sensitive paper and the current is automatically opened or closed in synchronism with the sending station. One operator can prepare 1250 square cm of roller surface per hour and about 1800 words of 5 letters can be dispatched in 10 minutes (*Phot. Ind.*, 1921, 197.)

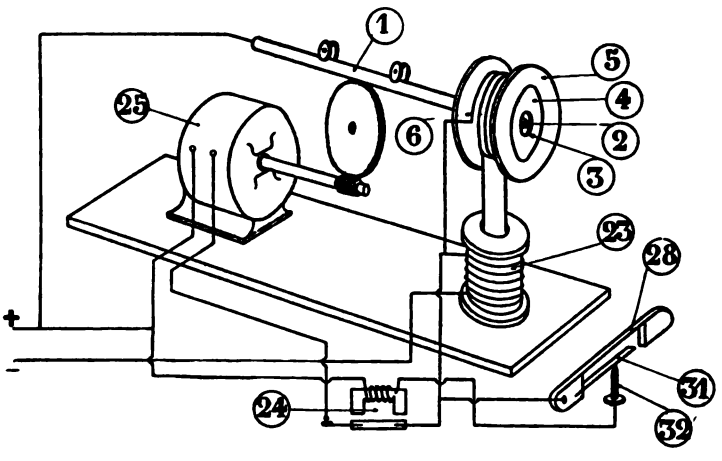
This rather reminds one of Korn's method, and probably the term "light-sensitive" as applied to the receiving paper is actually a misnomer, as the electric current presumably acts on it, as in the old Friese-Greene electrolytic printing.

THE SOLUBILITY OF DEVELOPING AGENTS. — Kail has determined the solubility of various developing agents in plain water and in a 5 per cent sodium sulphite solution plus the same weight of dry sodium carbonate. The first column gives the water solubility and the second the sulphite.

Adurol, bromhydrochinon	13	19.8
Adurol, chlorhydrochinon	92.3	41.0
Amidol	24.9	25.9
Edinol	15.9	9.7
Glycin	0.23	12.8
Hydramin	0.2	4.6
Hydrochinon	5.7	7.4
Eikonogen	7.6	8.2
Metol	4.8	4.5
Paramidophenol hydrochloride..	33.0	3.2
Pyramidol	6.5	7.6
Sulfinol.....................	0.14	15.6
Triamidotoluol hydrochloride..	39.3	9.8
Pyrogallol	52.4	41.8
Pyrocatechin	33.3	35.7

The weights are grammes per liter at 15° C. (*Phot. Korr.*, 1921; *Phot. Ind.*, 1921, 168).

HYDROMETRIC PICTURES. — Probably a good many can remember the little weather prophets sold many years ago, which took on various fantastic shapes, according to the ideas of the makers and which changed color as a sign of rain, etc. Those in the writer's memory were a wonderful pair of human figures cut out of card, dressed in muslin, and, being acquired in Austria, represented a peasant and his wife. One became blue when it was going to rain and the other turned pink, while the landscape also changed colors. They were unfortunately not reliable weather bureaus, but they attracted much attention. Now Henrich proposes that transparencies may be made in this fashion and gives the following directions: if the pictures are to be locally painted they must be placed in a



horizontal position with the film down and painted with the following; for blue, gelatine 5 g, water 80 ccm, cobalt chloride 2 g, glycerine 10 to 12 drops. After painting they should be dried for 24 hours. If more than one color is wanted then the whole of the glass should be coated with the above gelatine solution, without the cobalt. Then the parts to be colored should be painted over with the following: for green, cobalt chloride 1 g nickel chloride 0.75 g, water 200; for blue omit the nickel from the last solution; for yellow use a 1% solution of cupric chloride. The painted side should be placed to face the room, it being assumed that they are to be used for window decorations (*Phot. Ind.*, 1921, 720). The color change is dependent on the hygroscopic nature of the salts and the humidity has not much to do with the promise of rain.

A New Automatic Arc. — Garbarini gives the following description of a new automatic arc, which ought to be very useful for projection and enlarging. The positive carbon, *1, 2*, is of a special composition and gives a crater of 6 mm diameter. The negative pole is a hollow ring of copper, *3*, of 35 mm diameter; to prevent the heating of the metal a current of water, *4*, is passed through the interior of the ring. Outside the ring is a coil of wire, 6, actuated by the current and producing a magnetic field, and this causes a continuous movement of the arc at 500 to 3,000 revolutions per minute, which is not visually perceptible, and gives an uniform brightness of the crater and equal consumption of the carbon. The positive carbon is automatically fed into the center of the ring by the arrangements *24, 25, 28, 31, 32*. A quarter of an hour before this carbon is burnt out a signal is given to the operator, and if this be disregarded the arc automatically goes out. The lamp works with from 15 to 25 amperes and it is stated that autochromes were shown with a brilliancy hitherto only attainable with 40 amperes (*Bull. Soc. franç. Phot.*, 1921, **63**, 261).

The use of a magnetic field to keep the arc central is not new, but that does not detract from the usefulness of this particular form of lamp, which is made by the Etablissements Luchaire, Saint-Ouen, Paris, under the name of G. M. G. It is obvious that with the crater in a constant position and of uniform dimensions, without any interference of the negative pole, practically all the light is available, and it is possible to arrange this accurately on the axis of any optical system. Obviously only direct current can be used. The use of copper as the negative pole tends to increase the whiteness of the light.

An Aquarelle or Water-Color Printing Process. — M. Schumberger suggests the following process, which is on the lines of gum-bichromate, but is said to be easier. A well-sized drawing paper, with suitable surface, is stretched on a board and painted with the following solution:

Soft gelatine	40 g	280 gr.
Sugar candy	40 g	280 gr.
Water	1000 ccm	16 oz.

Dissolve the sugar and soak the gelatine for a short time and then dissolve by the aid of heat at 45° C. About 32 ccm of the warm solution (about 1 oz. to 500 sq. in.) are poured on the surface of the sheet 50 x 60 cm, and painted with a broad flat brush till the gelatine thickens, and it is then dried. Any water-color in tube form can be used, but Rowney's is recommended; a worm of about 6 cm (2⅜ in.) is squeezed out into a round dish and 18 to 22 ccm (300 to 370 minims) of water added, according to the temperature and moisture of the air; these are well worked up into a smooth cream and painted on the paper till a perfectly even coating is obtained. Towards the end this should be done with one of the flat brushes used for dusting plates, and then the paper should be again dried. Sensitizing is effected in a 1 per cent solution of ammonium bichromate for one minute, and after drying it is exposed in the usual way. The exposed paper should be immersed in about 2 cm (¾ in.) of depth of warm water at 45° C. and the dish rocked for about 8 minutes, and then pinned on a wet board and a scent spray used for development. The spray should be held about 40 cm (16 in.) from the print at first, and may be brought nearer for working up particular parts. The results are said to be very artistic (*Rev. franç. Phot.*, 1921, **1**, 122).

This is nothing more than Arbuthnot's modification of the gum-bichromate process (*Amat. Phot.*, 1910, 573; *Jahrbuch*, 1911, **25**, 546), with one-third more gelatine and sugar.

A Three-Color Camera. — H. Liabeuf has introduced a 3-color camera in which the plates are supported on the sides of an equilateral triangle with filters and roller blind shutters in front of them. Changing of the plates is affected by means of a handle, and it is thus possible to expose the three plates in 2 or 3 seconds (*Bull. Soc. franç. Phot.*, 1921, **63**, 167).

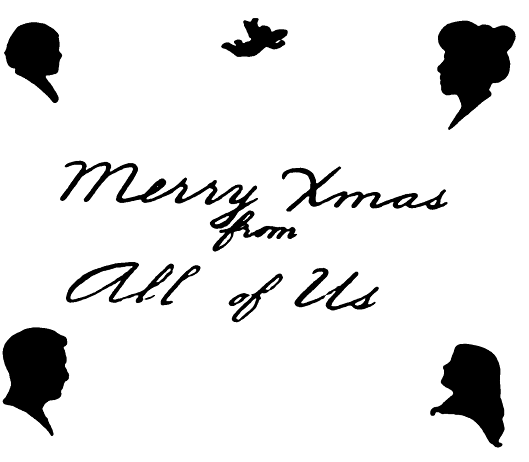
The disadvantage of any camera in which three successive exposures are made is obviously that it limits one's work to subjects in which there is not much movement, otherwise the three constituent images will not register. A. Hofmann (*D. R. P.*, 120,793, 1898) was the first, I believe, to arrange plates in an equilateral triangle with the filters in front; but in his camera the shutter was attached to the lens, and the movement of the plates was effected by a spiral spring actuated by the usual pneumatic release.

PRACTICAL HINTS

SILHOUETTES

Variety in the methods of the photographer will add spice to the work when the often tried ways of working begin to seem monotonous. One variation from the regular routine can be found in the making of silhouettes.

The conventional manner of handling the silhouette has a legitimate excuse for being: the black profile with its lack of any detail except the outline does carry its own interest and it conveys a strong impression of the character of the subject. But the making of these black and white pictures need not be confined to portrait profiles. The reader is probably familiar with some of the highly interesting war scenes which appeared in the magazine sections of the Sunday papers for a time. These showed groups of men in uniform and horses, and sometimes a big gun would stand in black relief against the sky. They were very effective and possessed a distinctive touch of art that was all their own.



The reproduction shown here of an original Christmas card gives a hint of what can be done in "black and white." The silhouettes were printed from a 4 x 5 plate on 4 x 10 paper, which, when folded over, was similar to the conventional form of card. The shears and paste pot played an important part in the making of the final plate for this card and the photographer who is not familiar with the possibilities of these two aids in his craft will do well to bear in mind the fact that they are capable of rendering great assistance. In this instance the individual silhouettes were made and printed so that each one was about three inches high. They were then cut out with scissors and pasted on a sheet of white bristol board about 12" x 15". The greeting was then written in in very large letters, the lines of which were given a sufficient body by going over with a small brush filled with India
was produced by copy
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Many variations w
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Some of the more important directions in the preface are to the following effect:

"This work is always to be handed down to the eldest son or to the oldest male who is a direct descendant. Each one who inherits this work must add at least one volume to same, and must have any faded pictures copied and replaced, also worn bindings restored."

"Work for permanency. Use non-fading inks, and see that photographic chemicals are thoroughly removed by washing."

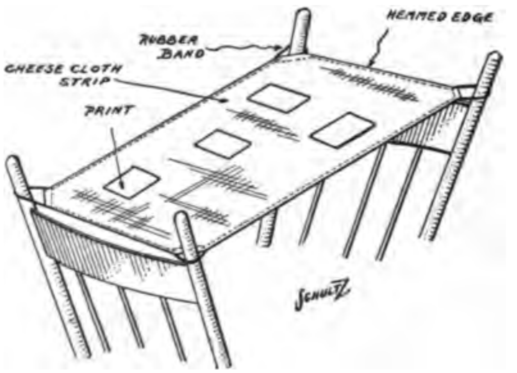
Then follow several pages devoted to lists of births, deaths and marriages, etc., as found in the usual family record. The photographs comprise pictures of the members of the family at various ages, educational institutions they have attended, places of residence, first place of employment, and the dozens of photographic bits of family interest which accumulate in the normal family, and which are so often sought in after years, but have disappeared through lack of some definite scheme for preserving them. These are such as the wistful tot on the chair — "Tall as Daddy, now." "Church at Pittsfield, J. A.'s First Charge." "J. A. and L. B. Starting for Europe." "Harold and His Dog." Dear Little "Sunny Jim," the light of the household for all too short a time, and many others which tug at the heartstrings and which we are glad of having kept when memory's images grow dim in later years. — D. M. McLean.

Time and Space Savers. — There are many persons deeply interested in photography but who refrain from indulging in the art for several reasons. The chief reason, which is prevalent among city dwellers, is the lack of space for the mass of equipment sooner or later acquired by the energetic amateur. Another reason is because of the inability to spare a great deal of time to devote to the hobby. With these reasons in mind, many amateurs indulge but to a small degree, using as little equipment as possible and possibly developing and printing but a dozen prints a week.

If a little consideration be given to the matter the amateur will find that it is not necessary for him to purchase much of the material advertised by photo supply stores in order to be entirely successful in picture making.

For instance consider the dark room. To an amateur of the character mentioned above a dark room is entirely unnecessary. Many of us have spent half an evening hanging blankets over a window and stuffing up cracks under a door in an effort to produce a light-tight stuffy room where we strain our eyes working with the feeble rays of a weak ruby lamp. For ordinary work nothing can beat the time and temperature method of developing. If this method of procedure is followed, the use of a dark room can be readily avoided. You know that if you use roll films, a kodak film tank obviates the use of a dark room. But how about film packs and plates you may ask. The answer is simple. A changing bag does the trick.

For those who are unfamiliar with a changing bag it may be stated that it is simply a cloth bag of light-tight material, having a pair of openings through which the hands of the user may enter into the interior of the bag and change plates or do other work within the bag. The film tank filled with developer together with the film cage, film tank cover and the pack of films to be developed are placed within the bag. It is an extremely simple matter to remove the films from the pack, place them in their cage, slide the cage into the tank and place the cover on the tank all within the bag.



If you use plates, a separate plate tank is unnecessary, for the adjustable plate cage of an Eastman plate tank fits within a post card size Premo film pack tank and the plates may be removed from their holders, placed in the cage and the cage lowered into the tank; all of this work being performed within the changing bag.

The amateur is usally directed to dry his prints on "a sheet of cheese cloth stretched on a frame." A frame of this character occupies considerable space when not in use and to some of us space is at a premium. A simple method of making a cloth drier is to simply take a small section of cloth, attaching to each of its four corners a rubber band. The rubber bands are slipped over the corners of a chair, two chairs being used as shown in the accompanying drawing, and the chairs are then drawn apart until the strip of fabric is taut. The prints may be placed face downward on the fabric and they will readily dry flat overnight. When not in use, the cloth strip may be folded to occupy but little space.

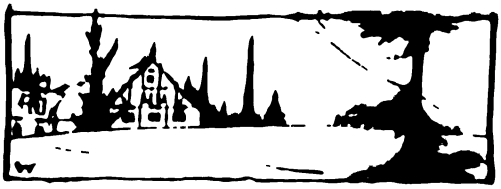
By giving a little consideration to the matter the amateur will find that excellent results can be secured with but little equipment.—Harry G. Schulz.

Copying Blue Prints with Plain Plates — Some time ago when preparing an article it was necessary to furnish some illustrations from engravings printed in blue. Much to my annoyance it was discovered after getting copying apparatus that I had no orthochromatic plates, and no means of getting any for a couple of days. Inasmuch as the article had to be sent off before night, I was under such circumstances, in something of a fix.

As is generally known to workers of serious purpose the ordinary photographic plate is extremely sensitive to violet and blue, less so to green, and very much less so where yellow, orange and red are involved. When for example, one attempts to photograph a landscape the blue of the sky in actinism is to all intents and purposes equal to the white of the clouds that float in the ether. To properly photograph the landscape therefore requires the employment of a plate of orthochromatic quality supplemented by an appropriate color-screen.

It has been repeatedly declared that to use a color-screen with a plain plate would be of no advantage, but in the case of the before mentioned blue prints I was willing to determine the matter for myself at the expense of a few plates.

When an ordinary photographic plate is exposed upon a landscape of a summer day the yellows and greens come out much too dark, while the blue of the sky is white or nearly so. It occurred to me that if in photographing the blue prints I were to place over them a sheet of yellow glass it would change the aspect to a green. With a plain plate in the holder and a three times color screen in front of the lens I gave an exposure of four times over normal and got a surprisingly good result. Employing the developer usually employed for normal results but well restrained with bromide, the lines came out bold, clear and distinct, which would have been far from the case had the filter been omitted. — JAMES [illegible]



QUESTIONS and ANSWERS

H. D. B. sends us a print with a circular patch of light right in the middle of the print and asks: "Why the circle in the middle of the picture? I have made six pictures in six different places and all have this circle in the center. Will you please advise if this is a defect in the lens or don't I use it right?" *Answer.* — We think the circle of light on the print you send us is caused by a leaky shutter. It is not due to any defect in the lens or to misuse of the lens. If the shutter is not absolutely light-proof and the camera is exposed to daylight with a film in position the light will leak through the closed shutter and will make a circular patch of light in the center of the picture. Sometimes this can be remedied by using a lens cap on the lens all the time when there is a film in the camera except just at the instant of making the exposure, though it would be more satisfactory to have a new shutter fitted to the camera.

E. B. E. writes: — "We depend upon your T[illegible] Chart right along and would like to use it for [illegible] man films, but cannot find them mentioned [illegible] — Portrait, Commercial, Commercial Ortho[illegible] Panchromatic. Can you give the necessary instructions so that the craft may pursue the[illegible] when it is desired to develop one of these films [illegible] tray and not to trust some chap's [illegible]" *Answer.* — We do not find the Eastman [illegible] listed, but we believe that if you treat them as [illegible] you will find that is about right.

L. F. Jr. says: — "Please advise me as to what paper to use to make enlarged negatives by [illegible]tion." *Answer.* — We believe you will find almost any good quality of bromide paper [illegible] is not a very important point and you will find that almost any thin single weight paper will do very well.

G. S. Y., using a home-made daylight enlarger, tells us: "[illegible] the trouble is the upper part of picture is not illuminated as strongly as the lower part, that is, the light does not come through evenly all over the picture. I would like to know what is the best way to overcome this trouble. Do you think a pair of condensing lenses will overcome this, or a large mirror fitted 45 degrees to the window will do?" *Answer.* — You cannot get even illumination all over the negative with the daylight enlarger you describe unless you use a reflector outside the window. This reflector must be long enough to prevent any direct light from the sky from reaching the negative. All the light passing through the negative should be reflected light from the sky overhead. The reflecting surface should be matte white, such as white painted wood or metal. *It should not be a mirror.* The angle at which this reflector should be placed may be 45 degrees from the vertical, or it may be a little more or less. This can be determined by inspection of the illumination on the easel. The use of such a reflector will give you even lighting all over the negative because it will be all reflected light. Practical Photography, No. 5, "How to Make Enlargements," covers all such details as this in the construction and use of apparatus for enlarging by daylight.

P. B. B. writes: — "I do quite a lot of developing and printing for amateurs. Do you advise the use of Hypono in my work? Are the results permanent? I do not have running water, so have to hand-wash all my work." *Answer.* — We think there is no doubt but that you will find "Hypono" perfectly satisfactory, but it would not be advisable to depend upon it entirely for the removal of the fixing solution from your prints. The best way to use it would be to wash the prints as usual in four or five changes of water to remove the bulk of the hypo and then use the Hypono to clear away the remaining traces. As far as we know, prints treated in this way will be permanent.

Mr. [illegible] writes as follows: — "My son D[illegible] has developed a case of poisoning which we [illegible] to be due to Metol. Our physician has never known [illegible] a case of metol poisoning but [illegible] skin disease he has ever [illegible] that is probably the cause. Richard [illegible] years old, has [illegible] used [illegible] began to use [illegible] developer was also very strong [illegible] changes and [illegible] the fingers and [illegible] great irrita[illegible] hands [illegible] worse with [illegible] hands are still [illegible] accidentally [illegible]

Mrs. E. D. G., Newburyport, says — "I am writing to ask if you can inform me how to have a negative copyrighted. I wish to sell enlargements from a small negative." *Answer.* You cannot copyright a negative, but you can copyright prints from it by filling out the proper forms and paying the required fee of either 50c. or $1.00 which varies according to whether you wish to have a registration certificate or not. The required forms and all details can be obtained by writing to the Register of Copyrights at Washington, D. C. A copyright would cover any prints made from the negative, whether they are contact prints or enlargements.

Mr. C. W. S., White River Juct., Vt., writes — "In Johnson's 'Method of Retouching' I am interested in a negative reducing pencil which is called 'Negafake.' Have never heard of these pencils before and understand they are of English manufacture. I would like to ask where in this country these pencils can be obtained, also the medium which is used with them. *Answer.* Ralph Harris and Company, 26 Bromfield Street, Boston, Mass., are the sole agents for and distributors of Bruce's "Negafake" in this country. They can supply you with the pencils and the medium, complete, in a box.

Mr. W. R. C. M., Council Bluffs, Iowa, writes — "Please oblige me with an answer to the following. I have a formula for making what is known as a photographic barometer, which is —

Gelatin	¼ oz.
Glycerine	1 oz.
Cobalt chloride	40 grs.
Water	4 oz.

The bromide print is soaked in this solution and dried. It then has the property of becoming pink in damp weather, blue in dry weather and lilac color in changeable weather. Will this formula work on gaslight paper, postcards, etc., and about how long will they have the power of changing color? *Answer.* The formula you mention for a solution of cobalt chloride which turns pink and blue according as the weather is damp or dry will work in just the same way on any substance that will absorb it, whether it is paper or cloth, so there is no reason why it should not be quite possible to make these photographic barometers on gaslight paper or postcards. These things last almost indefinitely, that is to say, as long as there is any of the cobalt chloride solution left, the only thing that causes them to deteriorate is that after some time they get dusty and dirty and the colors do not look so bright.

Mr. F. D. B., Pittsfield, Mass., asks for directions as to the easiest and best way of mounting photographic prints behind glass, as the photographic paper weights used to be mounted. *Answer.* A print can be mounted in optical contact with a piece of glass in this way: after thorough washing, the print should be dried between blotters. Soak about two ounces of soluble gelatine in cold water until soft, then add sufficient boiling water to make a rather thick solution. When the gelatine is thoroughly dissolved, filter it through muslin into a clean glass or porcelain tray standing in a hot water bath, the temperature of this solution being kept at about 100 degrees F. Have the glasses perfectly clean and near at hand. Immerse a print in the gelatine and when soaked, lift it out and lay it quickly on the glass, face down, of course, and firmly squeegee it into place. When dry the print is trimmed to the exact size of the glass and a piece of leatherette paper or cardboard can be pasted over the back to give a better finish.

Mr. R. G. Hamilton, Ont., asks if we can suggest a way in which he may be able to write on clear glass lanternslide plates so that announcements, etc., can be thrown on the screen. He writes — "I have used several kinds of inks, including India ink, but find it very hard to make them flow on evenly without spreading. I have also used a preparation for coating the glass black, using a sharp writing stylus for printing, but find this inconvenient because it requires a light under the plate as a guide, besides, after the plate has been used it requires considerable time and trouble to remove the coating. *Answer.* Possibly the simplest way to make temporary announcement slides is to soot a piece of clear glass in a gas or candle flame and then write the announcements with a stylus. This can be cleaned off very easily and the glass used again. Or you could coat some pieces of glass with gelatine and write on that. Instead of coating the glass you might clear some spoiled plates by reduction and use them to write on. The ink will "take" on the gelatine coating without spreading.

ROUND WORLD EXCHANGE CLUB

1067 (old number) J. J. Pugdliner, 2nd and Wood St., Box 165, Fullerton, Pa. 4 x 5, D. O. P. General, Bathing scenes, Outdoor portraits, Local views.

1128 Michael Cohen, 4902 North 12th Street, Philadelphia, Pa. 2 x 3, 4 x 5 and 5 x 7, Projection Bromides, Views of City, Sports, Historical Subjects.

1129 G. F. Bateman, 815 Willow Street, Trinidad, Colo. 5 x 7 and 8 x 10 and enlargements on D. O P. of Mountain Views and landscapes and Mexican People, also some "Wild West" or ranch pictures when available.

1130 Dr. R. Langfield, Apt. 2, 1746 Franklin St., Denver, Colo., any size up to 8 x 10, D. O. P. Contact prints and Enlargements, Views and Miscellaneous Subjects.

1131 Lowell H. Dollyer, 241 No. Main Street, Rushville, Ind. Any size, Landscape and Scenery.

1132 James H. Manlove, 112 S. 3rd Street, Richmond, Ind. 3A size, postcards only, Park Views.

1133 E. H. Nelson, 51 Elm Street, Springfield, Vt 2¼ x 3¼ to 4 x 5, D. O. P. Vermont Scenery.

1134 Thomas Hanley, Bowling Green Cottage, Grafton Street, Oxford Road, Manchester, England. Size, Printing Process and Character of Subjects not specified.

1136 William Burton, Harper Place, Webster Groves, Mo. 4 x 5, and 5 x 7, D. O. P., Historical and travel pictures.

1136 Daniel C. Flintjer, P. O. Box 506, Buffalo, N. Y. offers Postal card to 8 x 10 D. O. Prints, Marine Views of Great Lakes and Niagara Falls for views of Foreign Countries only.

1137 James H. Grime, Heaton Moor Road, Heaton Moor, near Stockport, England, offers Portraits and pictorial subjects, various sizes and in various printing processes.

1138 I. W. McDowell, 529 Sixth Street, Brandon, Manitoba, Canada. 3¼ x 4¼, Gaslight papers, General subjects.

1139 George William Knock, 47 South Market Street, Frederick, Md. 2¼ x 3½, 3¼ x 5½, 5 x 7, Contact prints and enlargements, Historical and Pictorial Subjects, Figure Studies, Athletic and Speed Pictures.

1140 Hugo Koehn, P. O. Box 609, Houston, Texas. 3¼ x 5½, or smaller Contact prints, Azo and Cyko.

1141 Dan O. Smith, 750 Pierce Street, Gary, Indiana, 3¼ x 5½, Azo paper, Indiana Sand Dune Pictures.

1142 Warwick A. Sullivan, P. O. Box 826, 311 E. Union St., Prescott, Arizona. 3¼ x 5½, D. O. P. and Bromide enlargements, Views in Northern Arizona.

1143 L. Pritzker, 1893 Pendrell St. Vancouver, B. C. Canada. Postcard and 5 x 7, various printing processes, Mountains, Canyons and Oddities.

1144 J. F. McClure, P. O. Box 935, Leavenworth, Wash. 7 x 11 enlargements, also contact prints on Velox 2¼ x 3¼, 2½ x 4¼, 3¼ x 5½, Local views and scenery.

1145 Arthur W. Courtney, 292 W. 4th Street, New York, N. Y. 2¼ x 4¼, Velox prints, New York City street views and general.

1146 Ralph Beebe, 2920 Hillyer Avenue, Detroit, Mich. D. O. P. prints up to 5 x 7, Landscapes and General.

1147 Albert F. Watt, 64 Calzada Vedado, Apartado 1350, Habana, Cuba, 3¼ x 4¼, Velox prints, General Tropical Scenery.

1148 Alfred W. White, 5205 E. Walnut Street, Indianapolis, Ind. 2¼ x 3¼, 4 x 5, D. O. P. Landscape, miscellaneous.

1149 Bert Leach, 1315 Third Street, Portsmouth, Ohio. Any desired size, D. O. P. or Bromide, Miscellaneous.

1150 Juventino Ocampo, Apartado No. 3, Pachuca, Hgo. Mexico. 5 x 7, Contact prints, Wild Animals and Landscapes.

1151 Sgt. James F. Rose, HQ. Company, 64th Infantry, Fort Washington, Maryland. 3¼ x 5½, views of the city of Washington.

1152 Lucile M. Bremel, Augusta, Wisconsin. 3¼ x 5½ and 2¼ x 3¼, Landscape subjects.

1153 Laurence F. Shaffer, Silliman Hall, Union College, Schenectady, N. Y. 3¼ x 4¼, with a few 3A and a few smaller, D. O. P., Artura and Professional Cyko, College Campus pictures, Athletic action pictures and landscapes.

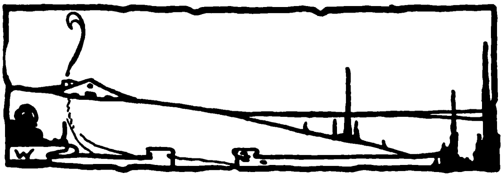
1154 Roy J. Kister, 7318 Hermitage Street, Pittsburgh, Pa. All sizes, contact D. O. P. prints up to 3¼ x 4¼, and enlargements on Bromide paper as agreed upon, Views, Portraits and Studies.

1155 Sidney E. Wells, Wells Studio, Fayetteville, N. Y. 8 x 10 projection prints of anything that is printed for the sake of the pictorial quality in the subject.

1156 Andres Fuentes, Ave. 2 Poniente Num. 512, Puebla, Mexico, desires to exchange glass positives from 45 x 107 stereoscopic negatives.

1157 Earl K. Foreman, Bank of Jerome, Jerome, Arizona, 3¼ x 5½, 10 x 15 cm Azo and Artura prints, also enlargements up to 7 x 11, Arizona Landscapes and General subjects.

A Correction. The address of No. 1087, W. Wynne Bolton, B. A., was wrongly printed in the February issue of AMERICAN PHOTOGRAPHY as "So. Boston." The correct address is "So. Easton."



LOCAL MANIPULATION

According to the calendar, we have not very long to wait before the coming of spring, a prospect which is to me at least by no means a case for dismay. Whether my blood is getting thinner or I don't eat enough sugar or what it is, I don't know, but these northern winters are just a bit of a bore, and a number of times during the past few months I have wished myself astride the Tropic of Cancer-corn or some equally warm object, with the gentle zephyrs blowing all around and no need to worry about the coal-bin.

Photography in winter is all right if you don't overdo it, but photography in spring looks to me far more attractive, and already I can feel the sap running in my veins as I look forward to greasing up my aged flivver (which with the latest reductions is now worth exactly $21) and skipping (how pat the word) up into the gentle hills that surround this overgrown village — a trowel and flower basket for the delectation of my family, a camera for me, and a sizable lunch for us all.

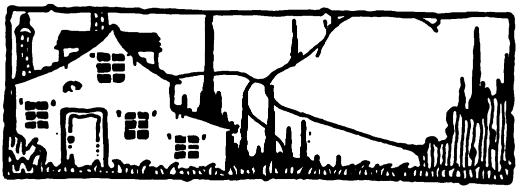
After all, isn't it the greatest compensation of winter that it makes you appreciate the spring? Until the spring approaches, you do not realize this; you are too busy stopping up the cracks and stoking the furnace and trying to outwit nature's determined efforts to cause you bodily discomfort, but when the back of winter has been broken and you get occasional foretastes of the balmy weather ahead — then it seems as if you had been living all these months only in hope of spring. The *wanderlust* comes over you. You think of trips and tours and camping expeditions. You contemplate the purchase of enormous stocks of film and plates, of a new camera, with which to get just the kind of pictures you have always wanted. You see the moon rise in the east, and its full orb sets your imagination going on long forgotten themes. As you pass along the street, the yearning strains of music from within some equally-affected household awaken chords of memory into new abandon, and, if you recall the harshness of the winter at all, it is to rejoice that its cold, dead skin is soon to be sloughed off.

I fear I am waxing too poetic, even for a photographic nut, and the chances are that when the reader sees these lines a fearsome blizzard will be blowing without and he will mock me in utter scorn for such futile ravings.

But it's coming, people — the spring is really coming. And then at least we shall have it all over the banana fed denizens of the tropics, whose problems are so few that they do not get up enough energy to appreciate their blessings.

It can't come too soon for me.—THE INTENSIFIER.

AFTER SUNSET AT THE PIER — WILFRED HILTON



SKETCH-BOOK LEAVES

MISCELLANY

Sketch-books being by reputation rather disorderly affairs, it is not against the rules to give the space this month to the comments and experiences of readers.

Anent the discussion in the December issue of "Favorite Subjects," here is an interesting letter from L. J. Moore:

"What do I like most to do? What a question to ask an amateur! Don't you know that there isn't a single thing under the sun that an amateur won't try at least once?

"Well, the chemical side of photography has always been of interest to me. Studying the various chemical reactions in development, fixing, reduction, and intensification will furnish the amateur with all the mental exercise he will need for a life-time. Does he doubt it? All right, let us try and prove it to him.

"Give a minimum exposure and a normal development with a normal developer at normal temperature — Negative No. 1. Give the same exposure and maximum development in a strong developer at Normal temperature — Negative No. 2. Compare Negatives No. 1 and No. 2 and receive *some* surprise. Increase the exposure and give normal development with normal developer at normal temperature — Negative No. 3. Give the same exposure and develop with a strong developer for a very short time at normal temperature — Negative No. 4.

"Compare Negatives No. 3 and No. 4, and receive a fresh surprise. And so on down the line from a minimum exposure and minimum development in normal developer at normal temperature to an exposure that is considerably on the full side and develop in hard, normal, and soft developers for maximum and minimum times, at higher and lower temperatures, and get negatives of varying degrees of contrast from very flat to extremely contrasty.

"What makes these negatives all different? And why? *There's* our mental exercise. (These experiments are perfectly safe provided there is a booby-hatch convenient to repair to in case of extreme mental anguish. — Sketch-Book Ed.)

"Another branch of work I like is to take old plates long past expiration date, expose them, and experiment with developers until I can produce a negative that is almost perfect.

"I am inclosing a print (It is a good one, too. — Ed.) taken from a negative made with a plate so old that the makers cannot tell me when the plates were manufactured. I also like all kinds of difficult copying — faded prints, tintypes, cutting out a single figures from a group and orthochromatic and pan-chromatic photography.

"I work on this stuff only in my spare time, which is only one or two hours a week. I like it, but I have to earn my bread in another line."

FROM WILFRED HILTON COMES THIS LETTER PROMPTED BY THE SAME DISCUSSION

"So you wish the members to make a picture of the kind of subject they like the best.

"Well, that is easy. All I have to do is to go through my album, choose the one I like the best, make a print or an enlargement and send it along. No, that will hardly fill the bill. You want us to make a *new* picture, the kind we like best. Almost as easy. I will take a picture of — what? Well, this is funny. Here I have been taking a camera around, upstairs, downstairs, inside, and outside for the past two years and I don't even know what I like to take the best. Good gracious. I will have to get to it by the process of elimination. I hate copying. I am not struck on interiors. Still life I have never tried. So it cannot be that. In-

PINHOLE PICTURE **DR. GEORGE RICHTER**

side portraiture? No, I have tried my wife's patience until I have made her a nervous wreck, and lost some of my best friends by giving them noses like carrots and ears like oysters. I have pictured them with big feet and no eyes, had them looking up to heaven with a pious look on their faces, a joke book in their hand and a swear word on their tongue. It has got to be something outside. Not speed pictures. I have never seen an artistic one yet. I like to take children, birds, animals, but not best. Now I am getting to rock bottom. I do love to wander through the woods, by a brook, or along the seashore, alone. I have tramped a whole day, taken one picture, and then thrown it away after printing. Just the same, I love to do this sort of thing. I have read sermons in stones, books in running brooks, and I have forgotten all the worries of an exacting business. I have dreamed of the beautiful pictures I have seen in AMERICAN PHOTOGRAPHY, and tried to do likewise. So far I have not been particularly successful. Disappointed, yes, many a time. Disheartened, no, never once. Why? Well, I have had the pleasure of anticipation, breathed the pure air sent from above and come home tired, but healthier and happier. I always loved pictures, but now I can enjoy them to the fullest extent. Books, magazines, art galleries, and even newspapers all mean more to me than they did a little over two years ago, thanks to AMERICAN PHOTOGRAPHY and my cameras. Of all, the pictures I love the most are the ones that express a mood of nature. The sentimental ones appeal most to me. I remember about a year ago I was down at Narragansett Pier for an hour or so, late in the afternoon. The beach was almost deserted and as the darkness closed in the beach seemed to draw me in a mysterious sort of way. I cannot express my feelings in words. I wonder if I could put on paper with the camera, some of those feelings which I cannot put on paper with pen and ink.

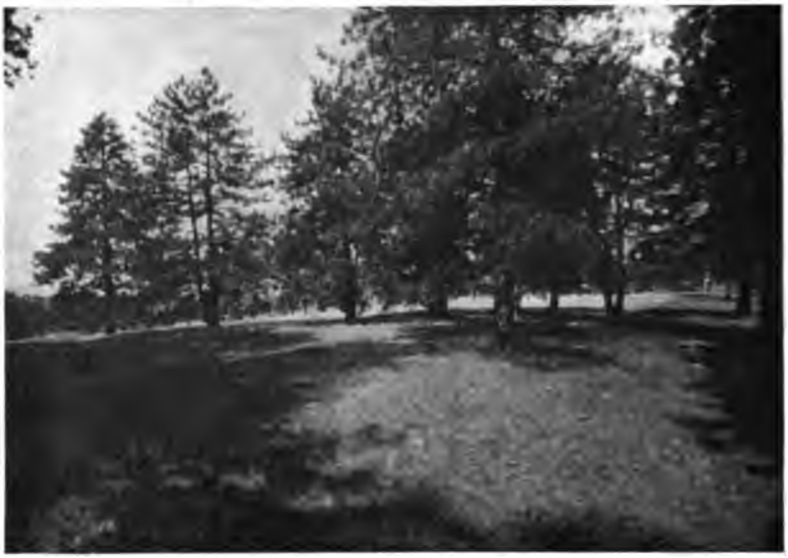
These, dear editor, were my thoughts on looking through the December installment of Sketch-Book Leaves.

"The result: A few days after, a little before four P. M., found me riding to the Pier in a machine along with two friends, one of them, the owner of the machine (the reason why I did not go alone). We arrived there some little time before sunset and I tried to shake my two friends for a little while so as to get the mood and subsequently the picture. As photographers, they were good coal-diggers, and would not take the hints. They had eyes and did not see, ears and did not hear. Leaving me alone meant to them walking between fifty feet and one hundred yards ahead of me. So I had to make the best of it. About fifteen minutes after sunset, and the conditions seemed to be about right. So I pointed my Graflex and gave it 1-10th of a a second at *f*-4.5. I repeated the performance at 1-15th and again at 1-25th. Neither of the exposures came up to my expectations, but the first one was the best. I developed the film and made the enclosed enlargement from part of the negative as per data on back of the picture itself. I will try again as soon as convenient, but I will go *alone* even if I have to walk the whole of the thirty odd miles there and back."

Mr. Hilton remarks that he has never seen an artistic speed picture. This is a feeling that many others have had. Yet speed pictures have an undeniable attraction, and why people like to take them is well put in a letter from Paul B. Day, one of whose pictures at a football game between Virginia Military Institute and Virginia Polytechnic is reproduced herewith. Says Mr. Day:

"Photography of this sort interests me because it differs so radically from most other kinds open to the amateur. In order to secure even reasonably good pictures of athletic events the photographer must act first and do his thinking afterwards, or rather he must have thought it out so carefully beforehand that he has only to release his shutter. A landscape or a portrait model will wait for a good light or a good pose, but not so the man running for a touchdown. So to the thrill of the game the photographer adds the pleasure of using his wit and skill in making a permanent record of the contest."

The print is a fine one, but being soft has lost some

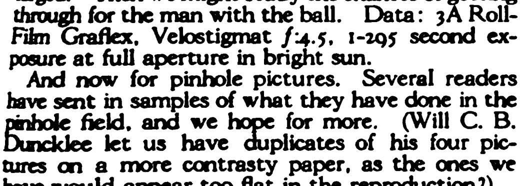


PINHOLE PICTURE **DR. GEORGE RICHTER**

sparkle in the reproduction. It should really be enlarged. Then we might study the chances of getting through for the man with the ball. Data: 3A Roll-Film Graflex, Velostigmat *f*:4.5, 1-295 second exposure at full aperture in bright sun.

And now for pinhole pictures. Several readers have sent in samples of what they have done in the pinhole field, and we hope for more. (Will C. B. Duncklee let us have duplicates of his four pictures on a more contrasty paper, as the ones we have would appear too flat in the reproduction?)

This month we have space only for two pictures made in an experimental mood by Dr. George Richter. The originals are 5 x 7. An English No. 12 needle was used (Watkins' power number 10), the distance from pinhole to plate (a Wratten panchromatic) being 3½ inches. Exposure was three minutes for one and five for the other around eleven A. M. in bright September sunshine. The prints are on buff stock. With the reduction necessary to publish them, they will not look very different from the effect obtained with a lens, except where the long exposure has resulted in movement of the branches. These two prints illustrate the value of the pinhole for wide-angle work when a wide-angle lens is not available. We shall have other examples to consider in a later issue.



READERS' CRITICISMS

BEST CRITICISM OF PRINT No. 24

No doubt the maker of this print is fairly well satisfied with the result. There are no stains or flaws in the film, and apparently everything came out much as he saw it when he snapped the shutter. For this reason if no other the print is interesting — interesting because nearly all of us have had much the same feeling toward similar prints of our own at one time in our career as photographers. We felt that we had at last mastered the art of development and produced a picture — not equal to those of the masters, of course, but pretty good for an amateur.

It is interesting also from the fact that it displays very clearly one of the great difficulties which confront the would-be cameraist who wanders out to the ravine to look for pictures. How can he get the picture wanted without getting too much of what is not wanted? In this case the maker got too much of what is not wanted, the too much consisting mostly of brush and undergrowth. Of course he could not help the brush getting in the way and he could not take the time to cut it off at the roots with his pocket-knife, but he might have succeeded in eliminating some of it by changing his point of view slightly toward the left. Then again, he might not have wished to do this. It all depends upon what he wished to photograph. Was it the brook or was it the cows? I am rather inclined to think it was the brook; otherwise he would never have allowed the clump of brush to come between him and his subject. In any case, I think he could have found a better place to set up his camera by trying around a little.

If, as I surmise, it was the brook he intended to photograph, it might have been better had he chased the cows off to some other pasture out of the picture all together. They do no good where they are and only distract from the main subject. (One critic cruelly suggests that the photographer was afraid to cross the brook.) As it is, the picture is too general. There is not enough interest in any one subject to hold the attention of the observer. A picture to be really a picture should have but one main point of interest and nothing should be in-

FAVORITE TYPE OF SUBJECT PAUL B. DAY

cluded which does not bear up and emphasize this one main point. One or two branches properly placed would have done more toward increasing the interest in this picture than all the brush which the maker piled in.

It is a pleasure to note that the maker of this print has progressed far enough to know that pictures taken against the sun are generally more satisfactory than those taken with the sun directly behind, or was this an accident? From the shadows along the bank of the brook and the highlights upon the backs of the two cows I would say that the light came from the upper left hand corner in front of the lens. This method of lighting brings objects more into relief, for it creates shadows, which are the making of a photograph when properly handled, and which cannot be obtained with the flat general lighting of the sun behind the camera.

So far our friend, the maker, has progressed, but he has yet another big thing to learn and that is — it takes more exposure to photograph against the light than it does to photograph with the light. 1-25 second with a rectilinear lens is fairly suitable for general snapshots taken with the light coming from behind, but I think he will find ¾ or even one second none too much when photographing against the light. The effects of underexposure are shown in the print by the almost silhouette shadows upon the sides of the cows, and the chalky white, which is so distracting, upon the piece of sunken earth by the side of the brook in the foreground. Always remember the old saying, "Expose for the shadows and let the highlights take care of themselves."

Another good habit to form is the habit of asking oneself before snapping the shutter, "Is the picture worth taking? Had the maker of this print asked himself this question before making the exposure I do not think he would have wasted the plate, for although there is no doubt a picture in the setting it is almost impossible to get it on account of the great quantity of brush and undergrowth which gets in the way. — BONAR W. BALFOUR.

OTHER CRITICISMS

In first looking at this print, I wondered, "Of what is it a picture — cows, stream, tree, or field? Why did the photographer decide to expose his plate on the subject?" To me the lesson of greatest import in this print — I hesitate to say "picture" — applies equally to novice, professional, and advanced amateur:

Never make an exposure unless you have a reason for it.

Always provide some one thing, whether a human face, a cow, a splash of sunlight, to which the details in the rest of the picture are subservient or may be so made.

Possibly the photographer was deluded by the beauty of warm yellow May sunshine on the brilliant tints of approaching verdure still half-concealed beneath winter browns. Lesson 2:

Carry a bit of blue glass or a pair of cobalt blue spectacles in your pocket if your eye is not sufficiently trained to divorce the elements of line, design, and atmosphere from color.

As to the technique: When used at full opening, non-anastigmatic lenses of the usual focus — less than half the diagonal of the plate — have a way of producing a "clothes-basket" definition at the corners of the plate. In landscape work, where one finds the delicate detail of interlacing branches, it is best to depend only on the more central portion of the field, and enlarge from a section of the negative, or else to obtain a lens of longer focus.

More exposure would have helped lighten the dense shadows of brook-bank and cows, and would have softened the confusing detail of bare branches by lengthening the scale of tones.

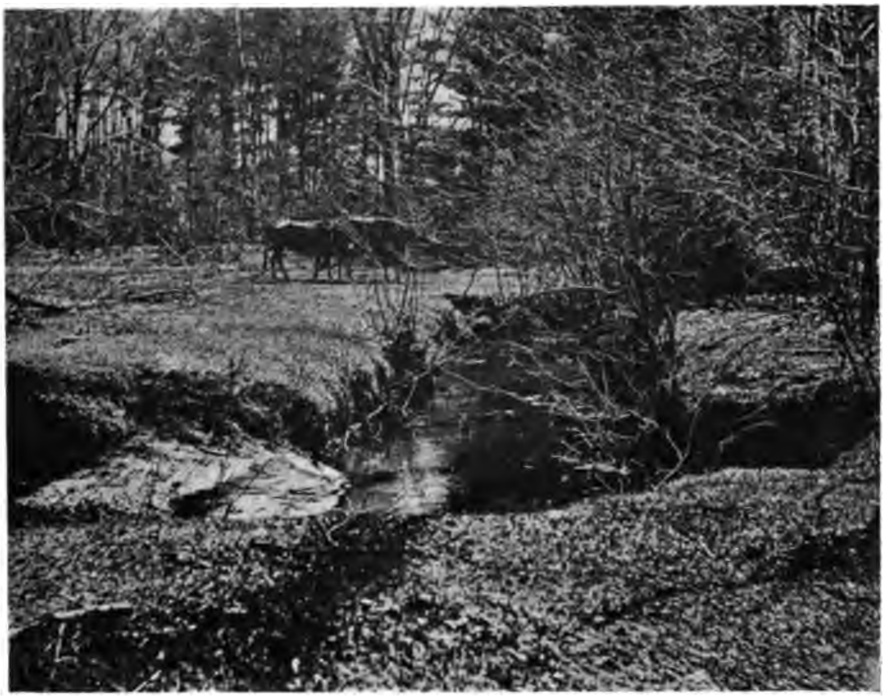
And, Lesson 3, which will probably occur to the average photographically well-read individual:

Trim! Trim!! Trim!!!

Seven-eighths of an inch, please, from the bottom, leaving just enough of the nearer edge of terra firma so that we shall not be asked if the photographer caught cold while standing in the water. A half inch from the left, thank you; it will eliminate the dark triangular shadow of the brook bank. Possibly half an inch from the top — there is little of interest up in those trees. Maybe three-fourths of an inch from the right — it is most confused. And — alas, we might trim away the whole print, looking for a center of interest.

Good-naturedly, let me suggest that the photographer do his last bit of trimming, and start out again some day for a picture of cows, and another day for brooks.

At least for one thing in the present picture he deserves congratulation — no conspicuous object is in the exact center of the composition. — R. D. NOYES.



Criticism Print No. 24

Scenes like that represented in Print No. 24 are almost certain to prove disappointing in the print unless great care is used in selecting a point of view that will cut out all unnecessary and distracting detail.

We have in this case a charming woodland scene in the fresh green of early spring with running water and cattle strongly placed to lend a note of life interest, and yet the result is and must be disappointing — this in spite of the fact that the view as the photographer saw it must have been a delightful one. Note the confusing network of bushes in the upper right and the patchy lights in the background. Underexposure has made the shadows inky and harsh. The 1-25 second at *f*:8 should have been 1-10 or even 1-5 second to soften the scattered lights and put some detail in the shadows. An obtrusive and out-of-focus foreground acts as a strong barrier to the eye in entering the picture and should be eliminated by trimming. One inch from the bottom and a like amount from the right margin will perhaps do the most good possible by this method. This will still leave a strong dark accent in the lower left corner and it is debatable whether or not a half inch more should not come off the bottom. An improvement might be made by a change of viewpoint far enough forward to eliminate the near bank of the stream and bring the water into the foreground and to the left far enough to get rid of most of the bushes and make the line of the bank run into the picture space and not out of it. Then if any stray branches cut across the cattle as in the print under discussion it would be a good idea (provided the cattle would obligingly remain) to use a pocket-knife on them. If the fallen tree on the left then became too prominent it might be moved far enough to get it out of the picture space if the enthusiasm of the photographer would carry him so far. Then a longer exposure and a softer print should get a pleasing result; not otherwise. — C. W. PLUMB.

The subject-matter in this picture originally offered an opportunity to compose an excellent pasture scene, for a couple of cows in a small pasture with a winding brook running through it is typical of the familiar country scenes in New England. However, the mere presence of good material does not necessarily produce a good picture, as illustrated in the pasture scene. In addition there must be an artistic sense exercised in the arrangement of the material in order to obtain the highest possible result, and it is apparent this second requirement has not been exercised as much as it should have been.

In the first place, there are two objects which have equal emphasis, and this, of course, is in opposition to the law of art which states that there should be only one emphasized point of interest, with the surrounding object in subordination. The cows and the brook are two black shadows which stand out from the surrounding tones and divide our attention, so that when we try to look at the cows the brook is trying to draw our attention away. Now, if the cows were shown drinking from the brook a concentrated point of interest could be obtained as well as more character and interest in the scene by the story it would tell.

The art of covering the plate, which is closely connected with composition, could have been improved a little more. The bank in the immediate foreground is unnecessary, since it does not add anything to the picture, but on the other hand devides it up into thirds; therefore I would trim about ¾ of an inch from the bottom. I would also trim about ½ an inch from the left-hand side, for it makes the brook appear too much in the center and the small shadow is objectionable. In retaking this picture I would, if possible, have the cows drinking, as I mentioned before, and expose from a point about two feet further to the right and about the same distance forward. This would show the cows almost facing the camera.

Then, there is one common fault which, no doubt, we all have and manifest now and then; namely, the technical fault of underexposing. The paleness and lack of detail in the shadows is not, however, the result of underexposure alone, but I think it is also due to the plate being fogged a little by the sun which is apparently in front of the camera. This might possibly be remedied by local intensification and reduction.

No doubt the author had to work very fast in order to get the cows before they went away, and in such a case one must realize he could not do everything that he wanted to do in so short a time. His selection of such a subject shows his endeavor to get a quiet country scene of beauty. — Warwick B Miller.

To be able to judge a print rightly, a person ought to be able to carry out the old proverb, "Put yourself in his place." In other words, one must be able to see the view as the photographer saw it, to try and understand the impression the photographer felt, and to be in sympathy with him.

When the maker of this print looked at the view shown on the ground glass, or in the finder, it must have been very attractive. It seemed, no doubt, as if it would make a beautiful picture.

It seems probable, however, that the photographer, seeing the view in its natural colors, forgot that the completed print would be in monochrome, and look altogether different from what he saw on the focusing screen. One of the first things that an amateur should try to do, is to experiment along this line. A direct view finder would help a lot. Directions for a home-made, but efficient finder, have appeared from time to time, in American Photography. A pair of blue glasses will help greatly, as will the practice of half closing the eyes, and then studying the composition. A study of one or more of the good books on Composition, sold by the publishers of this magazine, would be a wonderful help, and will be money well invested.

The writers in this magazine have often cautioned us about the foreground. It should be attractive, or else cut out. In this print, the foreground contains nothing attractive, being merely a grassy bank, and is separated from the rest of the picture by the brook. A tangled mass of underbrush fills up the right. The cows, which I presume were the reason of the picture, are not well grouped, — they should be somewhat separated; the little bush in the center tends to hide them somewhat. They are too near the center of the picture, its weakest point, as matters are now.

A very pretty picture, however, can be obtained from his negative. Take 1" from the left, 1½" from right and 1¾" from the bottom, and then enlarge the remainder, and one would be surprised at the result. The *picture* is in this small section of the print. Trim as above, and note the result.

It would seem to the writer that this negative was considerably underexposed. The A. P. Exposure tables give 1-10 second as near the correct exposure, judging as best one can, from the incomplete data given, but it would seem, under the circumstances, that 1-5 second, would not be too much. — Geo. Reed Stevens.

NEW CRITICISM PRINT NO. 27

Criticism Print No. 27 has been kindly furnished for the purpose by Mr. Arthur Seltenreich. It was made with a 1A Autographic Kodak Special with Kodak Anastigmat, *f*:6.3, the exposure being 1-10 second at *f*:11 with focus set at 15 feet at 3 P. M. in bright December light. Negative tank-developed with pyro; print on Azo E Hard.

For the best criticism of this print received by April 15 a credit of $2.00 towards books of our publication will be awarded. Any reader can compete, whether a subscriber or not. Address the Readers' Criticism Editor, and write any other communication on a separate sheet of paper.

THE QUESTION BOX

BEST ANSWER TO DECEMBER QUESTION FOR READERS

How may prints be mounted with paste so as to lie flat without cockling?

The writer spent some fifteen years in an art store, in various capacities, ranging all the way from errand boy to proprietor. In the workshop, a great many pictures were mounted, including photographic prints for amateurs, as amateur photography was just becoming popular, at least in our city; the writer was the first in that part of the state to stock cameras and supplies for amateurs.

Prints and other pictures were mounted by several different methods, but the one herein described was generally used, and with perfect success. The writer has in his possession prints mounted this way twenty-five years ago and more, and they are just as smooth as the day they were mounted, and the mounts have never warped. Nothing is required that any amateur may not obtain, and with but little cost.

As to materials: First, a piece of glass, a little larger than the largest print to be mounted. Plate glass was used in the store, but any kind will do, provided the largest print is not over 8 x 10. If larger, the glass might break. Some cheese-cloth, or old cotton rags, a tray of clean water, small pieces of blotting paper (ordinary), a few sheets of lintless blotting paper, two sheets of pulp or heavy cardboard some small pieces of manila paper, a little larger than the prints, paste, print-roller, sharp pointed knife, and brush. This last the writer was very particular about. Several widths were used in the business, from 1" to 4" wide, according to the size of picture to be mounted, but for most amateurs, a 1" brush will be found about right. It should be a rubber-set, chisel-edge brush, of good quality. One will not then be troubled by finding a bristle under the print, after it has been nicely mounted. The chiseled edge will allow the paste to be spread thin, and one can work close to the edge of the print, with the thin edge of the brush.

As to procedure: Arrange the prints in a pile, face down, smallest on top. Now place them in the tray of water, face down, and allow to soak a few minutes until limp. Remove them from the water, one at a time, largest first, hold it up, allowing it to drain a moment, then place it face down, on the glass. With a soft rag, or a piece of blotter, remove all the surplus water possible. On this print, place the next, removing all the moisture possible. Continue this operation, until all the prints are on the glass, in a pile. If a smaller print is placed on one that is larger, it should be placed in the center, and not close to the edge. When the prints are in a pile, remove all the water possible, with the print-roller; then, with a cloth, wipe the glass around the edge of the prints thoroughly dry. Place the glass, with the prints, a little to the left, the mounts, on each of which the proper position for the print has been marked, at the right. The paste cup and brush, the manila paper, and knife, also print-roller, to be placed conveniently. Charging the brush with paste, which should be thin but strong, spread it on the back of the print, working it from the center toward and over the edge, but be *sure* and *not* come *back*, *against* the edge of the print, as paste may then get on the face of the print. Use as little paste as possible. Place the mount in front of you, and with the point of the knife, lift the edge of the print from the pile, take hold of it with the fingers of both hands, and place it in its position on the mount. Lay one of the small pieces of manila paper on the print, and rub the print down on the mount with the fingers, working from the center toward the edge, making sure that there are no air bubbles under the print. A print-roller may be used if thought necessary or advisable. A sheet of lintless blotting paper, should be laid on one of the sheets of card or pulp board, and the mounted prints placed thereon. When it is full, another sheet of blotting paper is placed over the mounted prints, and other prints placed on it until all the prints are mounted. A sheet of blotting paper should be placed over the last layer of prints, and the pulp board over this. The writer then placed the whole thing in a large copying press, obtained from a junk dealer, screwed it down tight, and left them over night, or until thoroughly dry. They were then taken out of the press, when they would be perfectly flat, and would stay in that condition, permanently, but they *must* be *dry*, when taken from under pressure. Any kind of a weight, as a flatiron, will do all right, if heavy enough.

Sometimes, if but few prints were to be mounted, they were not placed in the tray of water, but were laid, face down, on a piece of paper, and the paste applied to the dry print, rubbing in, until the print was limp. It was then mounted as described above. As stated, the writer has prints mounted anywhere from twenty-five to thirty years ago, by both methods and they are as flat as the day they were mounted.

Sometimes, when prints were wanted in a hurry, and there was not time to dry them under pressure, a piece of paper of the same color as the mount, or one that would harmonize with it, was pasted to the back of the mount, both being the same size. The pull of one would counteract the pull of the other, and the mount would not warp. If the prints could dry even a few minutes under pressure, so much the better. — Geo. Reed Stevens.

New Criticism Print No. 27

OTHER ANSWERS

I have found that the best manner to prevent cockling, when mounting prints with paste, is to —

Secure a good grade of library paste, and apply directly to the back of the print with the finger. Do not mix any water with the paste, but rub on briskly. The paste may seem slightly dry at first, but will rapidly become workable.

Rub well until a very thin even coating of the paste is secured, using care that all edges and corners are covered.

The print should then be placed on the mount, smoothing it out with a damp cloth, and at the same time cleaning the print of any paste that may be on it.

Cover with a piece of clean white paper, and rub over it carefully with a warm iron, using care to see that the iron is not too hot, for such a condition will cause the print to curl up. The temperature should be just warm enough to be slightly uncomfortable to the touch. Should the print curl up on the edges, pull it up from the mount as far as possible, and rub more paste on it back as far as possible, and press with a cooler iron.

In a few seconds the paste will be dry, the print is smooth, and it is on to stay. — Floyd H. Kelly.

My method of mounting prints with paste is as follows:

Taking them from the wash water, I lay them face down on a sheet of glass and set the latter up on edge and allow to drain thoroughly. Then with a roller I squeegee all the water possible out of them. Before applying the paste a blotter is laid on the top print and the roller passed over it back and forward, the blotter moved far enough to apply a dry surface, the roller again passed over it using a firm pressure, the object of course being to get rid of all the moisture possible. The paste is then applied in the usual way, the print placed on the mount, a blotter laid down and with the roller it is pressed onto the mount. This of course is the conventional way of mounting prints.

Now take notice: — When a print has been mounted, in a moment or so, it begins to curl upwards. After more or less time, depending upon the thickness of the mount it will begin to recede, and finally become perfectly flat. When it reaches that point turn it upside down, — that is lay it on its face and let it dry:

When I have only a few prints to mount I use the dining room table, the latter of course being covered with a table-cloth, but when more room is needed I use the carpeted parlor floor.

The surface on which the prints are laid must be flat, and must have some kind of a cloth covering, and of course it goes without saying that the covering must be dry.

I have mounted prints in this manner up to 8 x 10 inches, on mounts from one to three-ply and with care my prints, or rather mounts, are flat or practically so. The main points seem to be to get all the moisture possible out of the print before applying the paste, and turning the mount face down at the proper instant. I have found this the most satisfactory way of mounting wet prints from among all the methods recommended. In fact the only objection I can find to it is the amount of room required when a great number of large prints are to be mounted. — J. W. Koenig.

During many years of experience. I have tried several so-called non-cockling mountants and while some of them were fairly satisfactory none were absolutely so. The great fault with them all is the time necessary for their preparation and application. They are all right for one or two prints, but for mounting large numbers of prints they are decidedly too slow in application to be practical.

In using any standard mountant, I find that a minimum of curl in any stock card mount may be secured by applying the paste to the print as thinly as is consistent with perfect attachment. The stiffer the paste, the more pronounced will be the bend in the mount.

A formula for a gelatine mountant giving very little curl is as follows:

Nelson No. 1 Gelatine	4 oz.
Water	16 oz.

Soften the gelatine in the water and liquify, then add a little at a time the following:

Methylated spirit	5 oz.
Glycerine	1 oz.

The mountant is used hot, in this manner. A piece of ground glass is dipped in hot water and drained. The mountant is brushed over it and the print laid face up on the pasted surface, covered with a piece of clean paper and rubbed into absolute contact. It is then removed and pressed down on the mount.

Glue is fairly satisfactory, its best quality being quickness of preparation. The back of the print is simply coated with glue and then pinned face down to a drawing board until thoroughly dry. After trimming the print, the *face of the mount* is moistened with a sponge or clean rag, the print is put in position, and the whole covered with a sheet of glass upon which pressure is put, for about a half or three-quarters of an hour. One must use care, however, in the choice of a mount when using this method, as the colors in many cover papers and Bristol Boards will not stand wetting, but will streak. — G. W. Visser.

I would submit the plan I have used on small and large prints, heavy and light paper and mounts.

Cover the back of the print with a good coating of the paste and lay it aside till perfectly dry.

When ready to mount, wet the surface of the *mount* thoroughly with water and place the print in its proper place and rub into contact. Then put the mounted print between two pieces of heavy plate glass and leave till dry. Extra weight may be put on top of the glass but usually is not necessary. — Robert Melrose.

MARCH QUESTION FOR READERS

If you were building a house for yourself and could include a darkroom in the plans, how would you locate and arrange it?

This is a question which should interest many. Most readers have no darkroom, or at best a makeshift, but a large number wish they *could* have one to meet their own ideas. Here is an opportunity to build your dream castle — but don't run the cost up too high.

For the best answer to this question received by April 15 a credit of $2.00 towards books of our publication will be awarded. Address the Question Box Editor, and please write on one side of the paper only.

OUR COMPETITIONS

SENIOR COMPETITION

The first prize in the Senior Competition was awarded to Lyle A. Morse for "The Bird's Twilight Song," a charming outdoor genre study. Though made in September, the sparse foliage gives one almost the impression of early spring. This is largely due to the direction of the lighting, which illuminated the leaves most brilliantly, and gives them a color value similar to that of the light green of early spring. This lighting also brings out the figure in strong relief against the background and gives a modeling and an aerial perspective which makes the picture very effective. The composition is carefully thought out both in respect to lines and masses. Made with a 4 x 5 Korona camera, equipped with 9-inch Verito lens, in Van Cortland Park near New York City. The exposure at 5.30 P. M. in September, in good light, was 2 seconds with a K3 filter at *f*:4.5. The Premo Speed Pack was developed with pyro in a tank and printed on Artura.

The second prize was given to John C. Bird for his print entitled "The Game Supreme," a football picture taken at Allegheny College, Meadville, Pennsylvania. This is a most unusual print, because of its decorative quality. The action of the game is sufficiently strong to carry the attention through the arch and yet the print is more than a picture of a football game. It places it in a frame and connects it with the outside world. The picture is really a poster and would be most effective for advertising purposes. Made with a 4 x 5 Revolving Back Graflex, equipped with 9⅞-inch Tessar Ic lens. The picture was made at 3 P. M. in October in good light with instantaneous exposure. The Eastman Speed Film was developed in pyro and printed on Artura Carbon Black E Rough Buff.

The third prize was awarded to "Portrait of A Modern Girl" by Mrs. Sterling Smith. This is an excellent example of rather unconventional portraiture, the figure dividing the attention to a certain degree with the architectural details. Perhaps the space in which the figure is placed is stressed rather too much, but if the right half of the picture be covered it will be seen that the whole print is much more impressive than the narrow panel. The placing of the two verticals and the effective opposition of the horizontals makes a charming composition. Made with a Century 6½ x 8½ View camera equipped with a 7-inch Cooke lens; the exposure was made indoors in San Diego, California, and was about 10 seconds at noon in December in moderate diffused light. The Eastman Portrait Film was developed in Rodinol and printed on rough Palladiotype.

Honorable Mentions were awarded as follows:

Gull Near Our Ship	Walter L. Bogart
Going Fishing	John N. Consdorf
The Hollyhock Girl	Louis A. Dyar
Galloping On	Geo. W. French
The Sculptor	Herbert J. Harper
Fluffy	Paul W. Macfarlane
Marie	Geo. Miller, Jr.
Pep and Powder Aplenty	Alexander Murray
A July Day	F. A .Northrup
Industry	G. W. Schinkel
The Willows	J. W. Schuler
Under Waiting Orders	James Thomson

Commendations were awarded as follows: —

Road to the Pasture	F. E. Bronson
Merry Christmas	E. H. Brown
Beams of Light	Stephen J. Bushya
The Woods Flock	Franklin Chapman
Where Town and Country Meet	Edwin B. Collins
Passing Storm	C. F. Dieckman
Despair — The Valley of the Shadow	Victor D. Elmere
Guardians of the Hills	Edwin A. Falk
Evening	J. H. Field
Outdoor Portrait	Gustave Glueckert
Winter's Mantle	Chas. T. Graves
Clyde Holt	R. M. Hart
Brooklyn Bridge	J. Kirkland Hodges
The Whispers of the Woods	Iiro Ito
A River Vista	E. E. Jones
The Fount of Summer	Frank King
Watching Grand Dad	W. Kitchen
My Hobby	Leo Kraft
Winter	Dr. E. L. H. McGinnis
Winter Sunshine	Louis R. Murray
Corn Eating Contest	Arthur Palme
Portrait of Miss R.	Thomas A. Pilling
Foliage	H. B. Rudolph
The Brook in Winter	Jas. J. Ryan
Thaw	J. H. Saunders
Viewing the Canyon	J. A. Singler
Vista of River, Field and Farm	Herman D. Warren
Still Life	B. M. Whitlock
The Mouse Trap	Wm. J. Wilson
Sunset Before a Storm	Oliver P. Young

JUNIOR COMPETITIONS

The first prize in the Junior Competition was awarded to Charles H. Kragh for his print entitled "On The Home Trail." Criticism seems uncalled for; the picture tells its own story and every element of tone and line from clouds to foreground is in harmony. Made in China with a 3¼ x 4¼ Adams Reflex camera fitted with a 6-inch Goerz Dagor lens. The exposure at 8 A. M. in April in diffused light was 1-8 second at *f*:6.8. The Ilford Special Rapid plate was developed with pyro-soda and printed on Kodak Royal Bromide, sulphide toned.

The second prize was awarded to "What Shall I Write?" by Theo. M. Fisher, a pleasant genre study in soft tones. The posing is very effective and the lines of figure and costume are attractively handled. Made in Colorado with an 8 x 10 Eastman View Camera equipped with a Struss single lens of 18 inch focus. The exposure at 11 A. M. in July with a medium light was 5 seconds at *f*:8. The Cramer Iso plate was developed in Rodinal and printed on Azo.

Honorable Mentions were awarded as follows: —

Off to the Sheep-camp	Ronald E. Cask
The Boudoir Cap	H. E. Horrigan
A Country Lane	Garnet E. Jacques
Pine Trees on a Plateau	I. Komamiya
"Hey, You!"	Howard E. Louis
In Trap — Rock Valley	C. W. Pratt
Metropolitan Tower	Ivan Sokoloff
The Ice Cutter	Harold Winslow

Commendatons were awarded as follows: —

The Emigrant Ship	R. H. Addison
A Corner of the Wood Lot	Stuart G. Baits
The Last Rays	Wm. E. Barr
The Critical Moment	Karl A. Baumgaertel
The Water Falls	Harry Beeler, Jr.
Something Interesting	C. W. Beese
Edgebrook	H. J. Brennan
The Winding Path to the Mists Beyond	M. E. Brown
Jeanette	D. H. Burger
The Road to the Barn	F. H. Chant
The Season Opens	Miss V. E. Condon
Grey Squirrel	H. E Erickson
Who's Afraid of Soap and Water	Joseph A. Evangelista
Lillian	Howard Fowler
Wintry Reflections	Arthur Gillam
Home Portrait	K. R. Gipple
Twins	Albert Hardman
He Loves Me, He Loves Me Not	Willard H. Harting
Steady	H. L. Herr
First Steps	Hubert Hill
Signs of Autumn	W. Keibel
A Wayside Drink	Jas. S. Loomis
Homeward Bound	Wm. F. Lowy
Fisherman's Rest	Jas. F. McKae
Tourists at Niagara Falls	Arthur W. Moreau
The Teacher	Walter Mucklow
Decorative Panel	Hannah G. Myrick
Anticipation-Realization-Gratification	M. W. Osterweis
Jalie	Mrs. W. R. Pearman
Heart of a Rose	Roland W. Reed

Winter Landscape	Paul Richardson
Home Portrait	Arthur Robinson
By the Forest Edge	Howard K. Rowe
Spring	Wells F. Samson
Le Petit Pavillon	Joseph Sitek
Just for a Scent	Dan O. Smith
Moonlight on Lake	G. A. Smith
At the Foot of the Hill	Harvey R. Sutcliffe
The Cathedral	Bancroft Townshend
If Winter Comes, Can Spring be Far Behind	Dr. Chas. Weston
In the Heart of Central Park	B. F. Willard
Hunting the Pulex Irritans	R. D. Wilson
Summer Day	John B. Ziemanski

ROLL OF HONOR

FIRST PRIZE

J. H. Field 8

SECOND PRIZE

Geo. W. French 8
H. B. Rudolph 7
Alexander Murray 6
Kenneth D. Smith 6

THIRD PRIZE

J. Herbert Saunders 8
F. D. Burt 6
Jared Gardner 6
Wm. J. Wilson 6
W. R. Bradford 5
L. A. Morse 5

HONORABLE MENTION, SENIOR CLASS

Louis A. Dyar 11
Gustav Glueckert 11
W. Kitchen 10
Sotaro Saba 10
Fred E. Crum 9
Irs T. Bronson 8
Herbert J. Harper 8
Edwin B. Collins 7
Junvention Ocampo 6
Clark H. Rutter 6
Oliver P. Young 6
Louis R. Murray 5
F. A. Northrup 5
Robert P. Nute 5
Walter Rutherford 5
James Thomson 5
Elizabeth B. Wotkyns 5

COMMENDATION, SENIOR CLASS

Walter L. Bogert 32
Chas. D. Meservey 21
C. B. Weed 19
Walter R. Henry 15
Dr. E. L. C. McGinis 11
Arthur Palme 11
Gus Schinkel 11
C. M. Harris 10
J. A. Singler 10
J. K. Hodges 9
Frank King 9
Leo Kraft 9
E. W. Quigley 9
Herman D. Warren 9
H. K. Armura 8
F. E. Bronson 8
E. E. Jones 7
H. B. Neal 8
B. M. Whitlock 8
Stephen J. Bushya 6
Wm. S. Davis 6
Victor D. Elmere 6
R. M. Hart 6
Dr. L. Broe 5
John N. Consdorf 5
Geo. Miller, Jr. 5
M. L. Shattuck 6
Arthur H. Travers 5

HONORABLE MENTION, JUNIOR CLASS

H. Bowly 5
J. Ito 5
Joseph F. Westgate 5

COMMENDATION, JUNIOR CLASS

F. H. Chant 21
W. Keibel 21
John Ziemansk 21
Garnet E. Jacques 18
Edwards H. Smith 17
Howard E. Louis 16
Harvey C. Pendery 16
Paul Richardson 15
P. F. Squier 14
L. Armchambault 13
Geo. A. Beane, Jr. 13
H. J. Brennan 12
Talbot Richardson 12
Howard K. Rowe 12
J. F. Webster 12
Wm. E. Barr 11
W. W. Kuntz 11
John Paton, Jr. 11
John P. Geertz 8
Geo. S. Matthews 8
A. C. Norton 8
Juan St. Cere 8
G. A. Smith 8
John H. D. Blanke 7
A. W. Crawford 7
Robt. E. DeLand 7
R. W. Garwood 7
C. V. Hewitt 7
I. Komaniya 7
Rex G. Mattice 7
Stephen J. Palickar 7
E. J. Williams 7
Walter P. Bruning 6
Willard H. Harting 6
Geo. F. Hogan 6
Wm. T. McGrath 6
P. A. Cazaubon 10
Stephen F. Isaac 10
J. W. Jeffers 10
Wm. F. Lowe 10
H. J. Mahlenbrock 10
M. W. Osterweis 10
Ivan Sokoloff 10
Alfred S. Upton 10
John A. Elkins 9
Simon Jochamowitz 9
B. F. Willard 9
A. S. Workman 8
Marjorie Chater 8
Chester Demaree 8
Jas. .V Dunham 8
Edwin A. Falk 8
Hannah G. Myrick, M. D. 6
Dr. C. W. Pratt 6
Harry Beeler, Jr. 5
Mary E. Benham 5
E. J. Browne 5
R. E. Cask 5
J. L. Clyburn 5
Herbert L. Douglas 5
Geo. L. Heath 5
John Janson 5
Harry G. Pearce 5
Edwin A. Roberts 5
Ford E. Samuel 5
A. M. Tomlinson 5
John Tornello 5
R. D. Wilson 5

OUR ILLUSTRATIONS

FRANK ROY FRAPRIE

We have given space this month to a series of photographs by Nickolas Muray, a young photographer of New York, who first attracted public notice by exhibiting at the London Salon of 1920. One of the pictures shown by him at that time and place was reproduced in AMERICAN PHOTOGRAPHY for October, 1921, and impressed with the beauty of Mr. Muray's work, the writer took occasion to seek him out at his New York studio and become familiar with his methods and ability. We have from time to time published other specimens of his work, which is rapidly becoming famous, and Mr. Muray now stands acclaimed as one of the most brillia[illegible] and versatile of the younger photographers of N[illegible] York. The Print Committee of the New York Camera Club, always on the lookout for new geniuses, has recently hung on the walls of the club a comprehensive exhibition of his work, reviewed elsewhere in this number, and from these pictures we have selected a number for reproduction, nine of which are shown in the present issue.

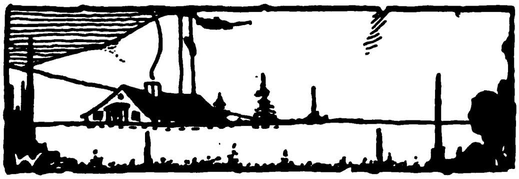
Muray's studio is on the top floor of an old house in Greenwich Village, New York. The room is scarcely twenty feet in its longest dimension and the effective space is shortened by the fact that the front wall has a sloping roof broken by a couple of dormer windows. What with a grand piano and a settee in front of an open fireplace, the working width is only a dozen feet. Necessarily illumination is by means of electric arcs and nitrogen bulbs, and in this tiny room, with very little freedom of motion for the camera, the artist has made all of the wonderful figure studies which he has exhibited and published, with the exception of a few taken outdoors.

Of course he has been fortunate in his models. Into Greenwich Village have flocked the poets and painters, the dancers and folk of the stage, all those who love picturesqueness and freedom of action. The folk of Greenwich Village are mostly young and full of the zest of living. Models are many; some pose as a livelihood, some pose to advertise themselves in their theatrical activities, some pose for sheer love of art. So, like the painter, Muray has found it easy to get models for his photography and is fortunate in finding women of lovely face and lissome form, picturesquely-clad dancers and actresses, and young girls whose graceful and rounded curves are full of the freshness of budding beauty. He has enabled us to behold pictures of womankind such as no previous photographer has produced in such number and beauty.

We may safely say that Muray's pictures of the nude surpass any previously made by an American photographer. Stieglitz has given us technical renderings of torsos of unsurpassable quality. Steichen and Demachy and Le Begue have rendered their nudes in unsurpassable subtleties of gradation through the controlled processes, but Muray works with direct prints and in his bromide shows grace, quality, and subtlety combined with a command of the sweep and line which places him at the apex of this branch of photography.

Individual criticism of these pictures is unnecessary. The selection which we give shows only a suggestion of his power, but no lover of art who saw it will soon forget the wonderful impression produced by the solid walls full of pictures at his show at the Camera Club of New York.

It is not our purpose to enter into a detailed criticism of the other pictorial contents of this number. Mr. Weston's photographs of China are amply explained by his own article, and the beautiful picture of Madame Olga Petrova, taken by a professional who specializes in theatrical photography, is far more than a mere professional portrait. It shows a wonderful woman portrayed most attractively, a sumptuous combination of background, costume and fan to set off a remarkable personality.



NOTES AND NEWS

Photograms of the Year 1921. The Annual Review of the World's Pictorial Photographic Work. Edited by F. J. Mortimer, F. R. P. S. Tennant and Ward, Agents, 103 Park Avenue, New York, N. Y.

This year's "Photograms" is as attractive a volume as ever. The 34 pages of reading matter include "The Year's Work" by the editor, Pictorial Photography in 1921 by F. C. Tilney and articles on the progress of pictorial photography throughout the world contributed by Harold Cazneaux (Australia), Arthur S. Goss (Canada), Rev. H. O. Fenton (New Zealand), Wilfred Sketch (South Africa), Floyd Vail (America), H. Buergel Goodwin (Sweden and Norway), G. Pascaud (France), Stefano Bricarelli (Italy), Hans Waago (Denmark), Adriaan Boer (Holland), Jose Ortiz Echague (Spain) and Sotaro Saba (Japan). The rest of the volume is filled with a generous display of nearly seventy pictures which are reproduced with the excellence that we have come to expect from the publishers of this always welcome book. The general tone of the comments on the progress of photography is optimistic and Mr. Mortimer notes that there is a notable tendency "more frequently to express the characteristic qualities of photography in picture-making than to rely more upon a striving after the effects given by other graphic processes." This, we think, is a step in the right direction. The reports from all parts of the world indicate that photography is finding again the favor that it enjoyed in the years preceding the war. Mr. Sotaro Saba of Yokohama, who is a frequent contributor of pictures to our competitions, is particularly enthusiastic regarding the rapid expansion of pictorial photography as a hobby in Japan. He reports that at the yearly photographic exhibition held at Uyeno Park in Tokio some three or four hundred pictures were selected out of thousands contributed from all quarters of Japan as well as from abroad. In picturesque language he goes on to say that "presumably a great number of young men have thrown their bottles away in order to carry a camera in the same hand," and he further reports the rather startling event that "Two photographic magazines gave birth in Tokio quite recently." We are interested to learn that pictorialist in Japan use soft-focus lenses to a great extent. The price of this volume is $2.50 in strong paper covers and $3.50 in cloth.

Handbook for Process Photographers, a practical guide to the making of line and half-tone negatives by the wet collodion method for use in the photo-engraving process. By Everett R. Eaton. Published by the author. Price $1.50.

This is an exceedingly practical and helpful little volume written by an expert with the purpose of providing a practical guide for the beginner who desires to become an intelligent operator rather than a "hit and miss" workman. The writer has tried to show that the principles underlying the art are not mysterious or vague and that anyone with a little study and practice can arrive at a clear conception of their meaning. Both line negatives and half-tones are dealt with in detail and the writer is careful to explain not only how things should be done, but why they should be done in that particular way. It is a book that every practical process worker would find exceedingly useful.

One Hundred Advertisements for Photographers. Written and published by The Abel Publishing Company, Cleveland, Ohio. 1921. Price $3.00.

This is the third book of studio advertisments issued by the Abel Publishing Company and will be welcomed by all who have been in the habit of using the splendid material in previous issues. In this series will be found new ideas for photographic advertising for special occasions, such as birthdays, Christmas, Graduation, Mother's Day and Valentine's Day and some clever suggestions for advertising home portraiture, groups and pictures of men, children and the young folks. In addition to these are two pages of lantern slides that have been used to draw business through the motion picture theaters and which are published as a suggestion of what can be done along this line, some snappy envelope stuffers, photographic slogans and some human interest articles from newspapers. In the introductory note will be found some useful hints on profitable advertising. Every professional photographer needs this book, for all must advertise and the abundant material here provided will prevent many costly mistakes and waste of expensive space.

POEMS OF THE DANCE, AN ANTHOLOGY. Edited and Illustrated by Edward R. Dickson, with an Introduction by Louis Untermeyer. New York, Alfred A. Knopf, 1921.

The poems grouped together in this collection range from ancient Hindu classics, 1500 to 1000 B. C. up to the poets of 1920. All phases of dancing are lightly touched upon, from the half clad child dancing to the music of a barrel organ in a New York slum; to Isadora Duncan and Pavlova. Even "the dancers in yellow! tall, saffron-garmented poplars with arms uplifted, slender-limbed beeches draped in a modest russet, chestnuts, walnuts and sassafrasses and ruffle-skirted maples" are included. Riotous ragtime, the stately saraband, the solemn ceremonial cakewalk and hurricanes of Highland reels crowd the pages of this unique volume and we are transported by the mere turning of a few pages from the "smoky lamplight of a Smyrna cafe" to the Hippodrome. The editor of this anthology is well known to us and our readers as a pictorialist endowed with unusual skill and rare artistic perceptions and his book is embellished with more than a dozen of his delightfully decorative pictures. These are described as "impersonal pictures, espousing the cause of no particular dancer or school of dancing and illustrating no particular poem. The photographic medium has been employed to link the oldest with the newest of the arts, and the pictures were nearly all made beneath unsecret skies and sunlit landscape." It is a book that will be enjoyed by many for it appeals to those who are interested in poetry, in dancing and in pictorial photography.

THE STORY OF THE MOTION PICTURE 65 B. C. to 1920 A. D., by Ben J. Lubschez. Reeland Publishing Company, Inc., 727 Seventh Avenue, New York City. Price $1.00. In this very interesting little book the author tells in a very clear and concise manner the story of the phenomenal progress of motion pictures, tracing their course through the Thaumatrope, invented in 1825, the Phenakistoscope, 1833, the Zoetrope, 1834, and the Kinematoscope, invented by Dr. Coleman Sellers in 1861 which was the first machine to recognize practically all the vital principles of the motion picture. The interesting experiments of Edward Muybridge who conceived the idea of taking pictures with a series of cameras set close together and with their shutters set off in close succession, and the discovery in 1889 of the suitability of celluloid for carrying the photographic emulsion with the long-fought legal battle for the rights of invention, are of special interest to photographers. Edison, Pathe and Gaumont are mentioned, as well as other well known names, and some idea of the rapid development of the motion picture industry may be gathered from the fact that in the United States at the present time there are over 30,000 theaters attended by about 13,000,00 people daily and that more than 2,000,000 a day is spent in admission fees. And this commercial development has taken place in less than 25 years. It is a book that all lovers of motion pictures will enjoy reading.

Miss Sophie L. Lauffer, of Brooklyn, N. Y., who is one of the shining lights of the Pictorialists, held a small but interesting exhibition of her prints at the Studio of Nickolas Muray, on McDougal St., N. Y. City, from Dec. 11th to Dec. 21st last. The prints were by various printing processes, bromoil, predominating. They were good examples of this industrious lady's work. Many of the prints had been shown in a number of the large exhibitions here and abroad. — CHARLES H. DAVIS.

PICTORIAL PHOTOGRAPHERS OF AMERICA

The first meeting this year of the P. P. A. was held at the Art Center, 65-67 East 56 Street, New York City, on Monday evening, January 9. Mr. Elbert Macnaughton presided. The spacious hall was crowded to the doors. Mr. Ira W. Martin gave us a very excellent talk upon Still Life; his remarks were replete with wisdom and truths in re composition. Mr. Martin was followed by Mr. Richard M. Coit of the Brooklyn Institute, whose dissertation upon Landscapes was truly elegant, pleasing and instructive; his many references to the term "landscape adjuster" were a great source of joy and entertainment. It is safe to say that Mr. Coit has coined a compound etymological entity which always will be photographically with us. There was a large entry of prints illustrative of the subjects of the evening. Mrs. Hervey and the rest of the hanging committee are to be highly complimented upon their indefatigable energy in making this part of our meetings a great success. — T. W. KILMER.

FORTHCOMING EXHIBITIONS

Place	Date	For information write to—
Pittsburgh Salon	March 1st to March 31st, 1922	
Pictorial Photographic Society of San Francisco, 1st Annual Salon of Photography	May, 1922	H. A. Hussey, Salon Sec. 64 Pine Street, San Francisco, California
Portland Camera Club, Photographic Section of the Portland Society of Art. Annual Salon.	March 3rd to April 2nd, 1922	O. P. T. Wish, Secretary Portland Society of Art Portland, Maine
Camera Club 121 W. 68th St., New York	March 1st to 31st	American Photography Prints 2nd Annual Competition
Photo Contest and Exhibition for Amateurs. Under Auspices of Atlantic City Chamber of Commerce.	Entries Close March 1st.	Atlantic City Chamber of Commerce. Frank H. Fischer, Chairman, Atlantic City, N.J.
Birmingham Photographic Society. 31st Annual Exhibition.	March 1st to March 6th.	Mr. Philip Docker Birmingham Medical Institute Edmund Street, Birmingham, England.

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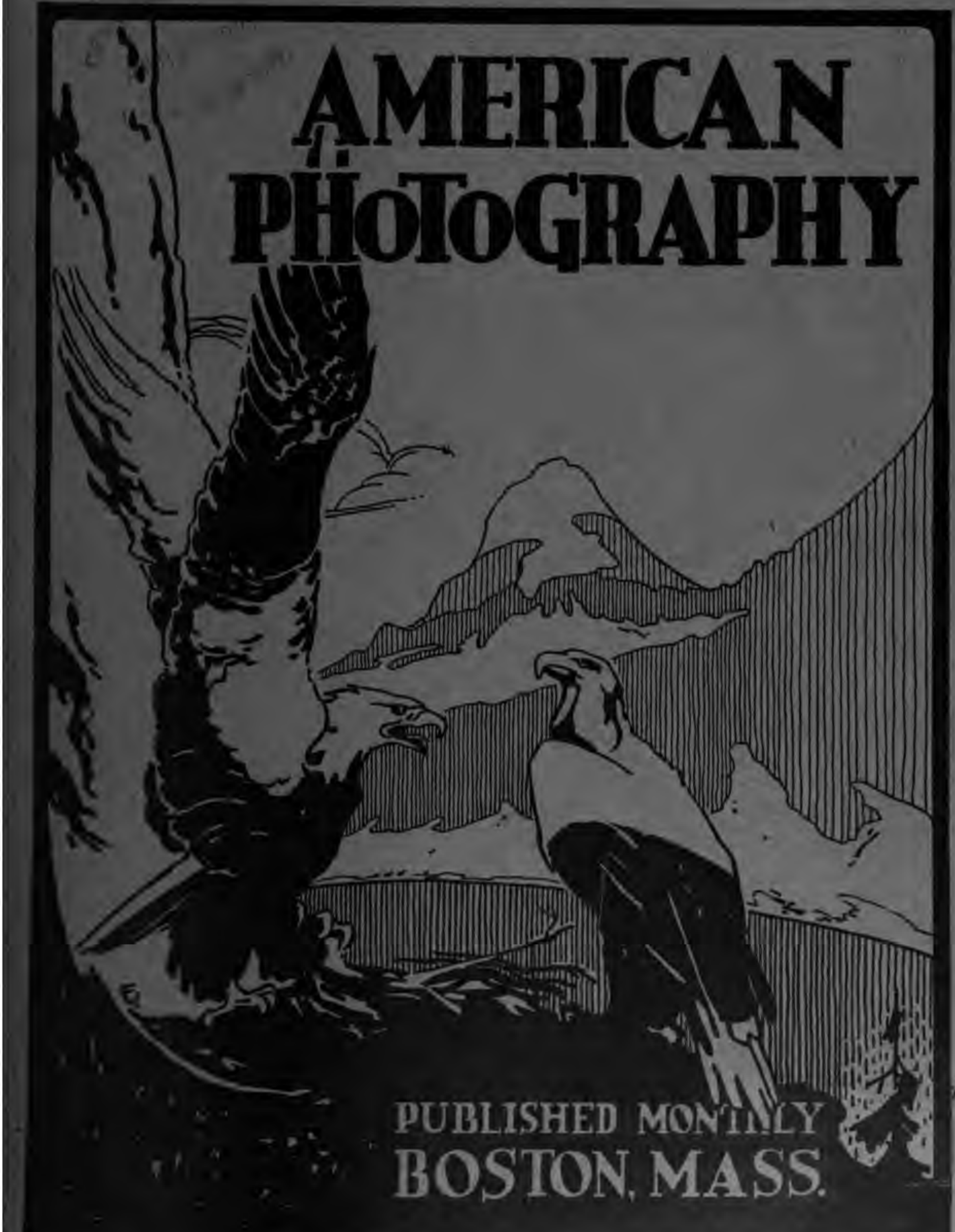

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AMERICAN
PHOTOGRAPHY

Vol. XVI BOSTON, MASS., APRIL, 1922 No. 4

OUR SECOND ANNUAL COMPETITION

FRANK ROY FRAPRIE

The PRINTS submitted in the Second Annual Competition of American Photography, entries for which closed February 1, 1922, were judged on February 10. The number of prints submitted was smaller than last year, a fact which has been noted in the case of other exhibitions and is probably to be ascribed in some measure to the economic depression of the past twelvemonth. It is also due partly to the fact that the rules requested that not more than five prints be submitted by any competitor, whereas in the previous competition entries of from twelve to forty or fifty prints were recorded. This year we received 1172 prints from 360 competitors, in comparison with 1608 prints from 446 competitors in the previous year. The decrease was largely among the type of competitors who send a number of small unmounted prints of the class which may be called average snap-shots. Entries of this nature were very few in number this year, whereas in 1921 there were nearly a hundred such lots. The pictures submitted were, on the average, of a very high order of merit, and very few of the prints did not deserve serious consideration.

A noteworthy feature of the competition was that the number of prints sent from abroad was very much increased, there being numerous entries from England, Scandinavia, and Austria, and scattered entries from a number of other foreign countries. The foreign work, while as a rule, unmounted and smaller in size than most of the American pictures, was characterized by greater care and study in the selection of subject and execution of the print. Most of the foreign prints were made by some controlled process, such as gum bichromate, bromoil, or bromoil transfer.

The judges were Herbert B. Turner, President of the Boston Y. M. C. U. Camera Club, Arthur Hammond, Associate Editor of American Photography, and the writer. The judging, although it consumed considerable time, did not present any special difficulties. The prints were gone through one by one, each print being judged worthy of further consideration or laid aside. This process was repeated four times, the last judgment resulting in three classes, A, B, and C. The A's turned out to contain seventeen prints and from these, after careful and prolonged elimination, three were demoted to Class B. All the prints in Class B received Honorable Mention and the remainder of the Honorable Mentions were taken from Class C. The judges had no difficulty in selecting four prints from the fourteen in Class A and in deciding on their order for the four major prizes.

The prize-winning pictures and those awarded Honorable Mention will be exhibited at the Camera Club, 121 West 68th Street, New York, from March 1 to March 31, at

Pennsylvania State College, State College, Pennsylvania, from April 5 to 15, at the Wilkes-Barre Camera Club, Wilkes-Barre, Pennsylvania, late in April and early in May, at the Worcester Art Museum, Worcester, Massachusetts in May, and at the Boston Y. M. C. U. Camera Club, Boston, Massachusetts on dates yet to be announced in October, 1922. It will be possible to arrange other dates between May and October and possibly during November and December of the current year, and any camera clubs interested in seeing the prints are invited to correspond with us.

A list of all the prizes follows, the numbers being those assigned to the prints for the public exhibitions.

FIRST PRIZE

1	**John M. Whitehead, Alva, Scotland**	*Across the Moor*

SECOND PRIZE

2	**Raymond E. Hanson, North Wilmington, Mass.**	*Winter Scene*

THIRD PRIZE

3	**George F. Prior, Chingford, England**	*April Sunshine, Pump Court, Temple*

FOURTH PRIZE

4	**Wayne Albee, Seattle, Wash**	*Portrait of a Player*

FIFTH PRIZES

5	**P. Douglas Anderson, San Francisco, Calif**	*Wanderers from Home*
6	**Alfred Brinkler, Portland, Me.**	*The Golden Pathway*
7	**C. A. Eaton, Boston, Mass.**	*Looking Backward*
8	**Waldemar Eide, Stavanger, Norway**	*Early Morning*
9	**Julius F. Graether, Newark, N. J.**	*The Dockman*
10	**Johannes Krone, Vienna, Austria**	*Eventide*
11	**Joseph Petrocelli, Brooklyn, N. Y.**	*The Curb Market — New York*
12	**Miss M. Shelley, London, England**	*In the Hills of Ceylon*
13	**H. Y. Summons, Virginia Water, England**	*Canterbury — West Gate*
14	**Lionel Wood, F. R. P. S., Brighton, England**	*Friends of the Footlights*

HONORABLE MENTIONS

15	**William A. Alcock, New York City**	*A Lonely Vigil*
16	**P. Douglas Anderson, San Francisco, Calif**	*Solitude*
17	**Alice G. Baumann, Zürich, Switzerland**	*Gathering Storm*
18	**Alice G. Baumann, Zürich, Switzerland**	*Through the Winter Woods*
19	**Stefano Bricarelli, Turin, Italy**	*The Fountain*
20	**Stefano Bricarelli, Turin, Italy**	*The White Chapel*
21	**A. D. Brittingham, Bridgeport, Conn.**	*Miss Mischief*
22	**A. D. Brittingham, Bridgeport, Conn.**	*Sylvia Knox*
23	**Katharine Brucherseifer, New York City**	*Sonia*
24	**Frederick W. Carter, Covina, Calif**	*Still Life*
25	**C. Charles, New York City**	*By Flashlight*
26	**B. B. Conheim, Chicago, Ill.**	*Decorative Study*
27	**William S. Davis, Orient, L. I.**	*Reflections*
28	**John Paul Edwards, Sacramento, Calif.**	*Inbound from the Carribean*
29	**Waldemar Eide, Stavanger, Norway**	*Dancing Study*
30	**Waldemar Eide, Stavanger, Norway**	*The Girl in the Net*
31	**Waldemar Eide, Stavanger, Norway**	*Idol*
32	**John A. Elkins, Indianapolis, Ind.**	*The Canal, Autumn*
33	**O. E. Fischer, Detroit, Mich.**	*Water Forms*
34	**Frank Flannery, Berkeley, Calif.**	*A Summer Breeze*
35	**J. N. Giridlian, Pasadena, Calif**	*Portrait of Karl Struss*
36	**J. N. Giridlian, Pasadena, Calif.**	*Outdoor Portrait*
37	**Louis A. Goetz, Berkeley, Calif.**	*Old Strasbourg*
38	**Julius F. Graether, Newark, N. J.**	*The New York Library at Night*
39	**Paul E. Guillot, Sfax, Tunisia**	*Fog in the Forest*
40	**Thomas E. Halldorson, Chicago, Ill.**	*Portrait of an Elderly Man*

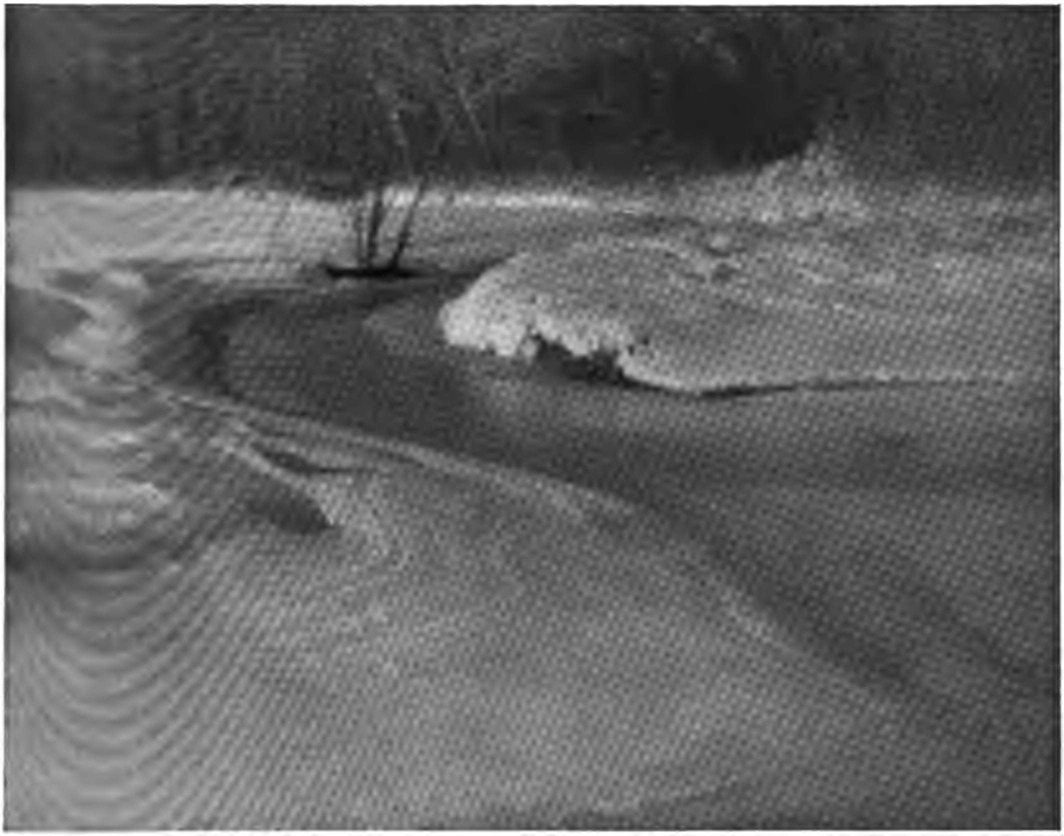
ACROSS THE MOOR

JOHN M. WHITEHEAD

First Prize, Second Annual Competition

41	G. H. S. Harding, Berkeley, Calif.	*Low Tide*
42	C. M. Harris, San Francisco, Calif.	*Far from the Madding Crowd*
43	Emily H. Hayden, Catonsville, Md.	*Repose*
44	Charles A. Hellmuth, New York City	*A Summer Idyll*
45	Eugene P. Henry, Brooklyn, N. Y.	*A Maine Fishing Village*
46	Anson Herrick, San Francisco, Calif.	*Autumn Afternoon*
47	Antoinette B. Hervey, New York City	*In the Arbor*
48	Lilian M. Hobart, Northborough, Mass.	*The Pilgrims' Progress*
49	Blanche C. Hungerford, High Bridge, N. J.	*Mary Farren*
50	Henry A. Hussey, Berkeley, Calif.	*Sunlit Hills*
51	Edgar Ingram, San Francisco, Calif.	*Into the Dawn*
52	T. W. Kilmer, New York City	*The Lily Pond*
53	T. W. Kilmer, New York City	*Marine*
54	Chas. H. Kragh, Tucson, Arizona	*The Fortune Teller*
55	Johannes Krone, Vienna, Austria	*Viennese Charm*
56	Sophie L. Lauffer, Brooklyn, N. Y.	*The Nymph*
57	Francis O. Libby, Portland, Me.	*The Castle of Morgan Le Fay*
58	Francis O. Libby, Portland, Me.	*Yankee Doodle*
59	Dr. Rupert S. Lovejoy, Portland, Me.	*The Long Trail*
60	Dr. Rupert S. Lovejoy, Portland, Me.	*The North Country*
61	Salome E. Marckwardt, New York City	*Parting Day*
62	Ray Mathewson, Asheville, N. C.	*Haughty*
63	Betti Mautner, Vienna, Austria	*Evening Peace*
64	Betti Mautner, Vienna, Austria	*The Village Wheelwright*
65	Amelia H. McLean, Bronxville, N. Y.	*Surf*
66	Holmes I. Mettee, Baltimore, Md.	*La Belle*
67	Holmes I. Mettee, Baltimore, Md.	*A Spanish Lady*
68	I. Nakayama, New York City	*Still Life*
69	G. Houson Payne, Jr., Baltimore, Md.	*Old Copper*
70	Joseph Petrocelli, Brooklyn, N. Y.	*Spring Showers*
71	W. H. Porterfield, Buffalo, N. Y.	*A Day in June*
72	Ernest M. Pratt, Los Angeles, Calif.	*The Park Lagoon*
73	George F. Prior, Chingford, England	*By St. Paul's, Covent Garden*
74	Lilian E. Redmayne, New York City	*In Nova Scotian Waters*
75	Jane Reece, Dayton, Ohio	*Interior*
76	Aage Remfeldt, Christiania, Norway	*Portrait of a Lady*
77	Matsy Wynne Richards, Greenville, Miss.	*Old Aunt Maria*
78	Walter Rutherford, Toronto, Ontario	*Paths of Glory*
79	H. W. Schonewolf, Buffalo, N. Y.	*Winter*
80	G. H. Seelig, Boston, Mass.	*The Snow Covered Hill*
81	Thomas O. Sheckell, Salt Lake City, Utah	*The Adventurers*
82	Thomas O. Sheckell, Salt Lake City, Utah	*A Swan Decoration*
83	Anna M. Smith, Binghamton, N. Y.	*Meditation*
84	Eleanor L. Smith, San Diego, Calif	*Eucalyptus*
85	Eleanor L. Smith, San Diego, Calif.	*Peace*
86	Eleanor L. Smith, San Diego, Calif.	*A Roadway Along the Hudson*
87	Dr. F. S. Sornberger, Cortland, N. Y.	*The Thunder Shower*
88	William D. Spear, Trenton, N. J.	*Arch, Blair Hall*
89	Karl Struss, Hollywood, Calif.	*Spring*
90	Karl Struss, Hollywood, Calif.	*Moonlight, Samarkand*
91	Karl Suchy, Vienna, Austria	*The Old Mill*
92	J. J. Swain, Brooklyn, N. Y.	*Curls and Pearls*
93	Frederic E. Tutton, Exeter, England	*Still Life*
94	Hugo van Wadenoyen, Jr., F.R.P.S., Cardiff, South Wales	*John*
95	Hugo van Wadenoyen, Jr., F.R.P.S., Cardiff, South Wales	*Houses at Cowbridge*
96	Hugo van Wadenoyen, Jr., F.R.P.S., Cardiff, South Wales	*Lady with Striped Scarf*
97	Miss A. M. Walters, Stroud, England	*Figure Study*
98	Miss A. M. Walters, Stroud, England	*Old Jane*
99	John M. Whitehead, Alva, Scotland	*In a Land of Romance*
100	John M. Whitehead, Alva, Scotland	*A Deserted Mill*
101	Albert Williams, Jr., Trucksville, Pa.	*At the Cross Roads*
102	Ernest Williams, Los Angeles, Calif.	*Summer Sunshine*
103	Ernest Williams, Los Angeles, Calif.	*November Evening*
104	Lionel Wood, F.R.P.S., Brighton, England	*A Group of Critics*

Checks for the prizes were sent to the prize winners about March 1 and a notice of the awards has been sent to each contestant. The prize winning pictures are reproduced in this issue and a number of those which were awarded Honorable Mention will appear in future issues. We plan to repeat this contest a year from now and hope that all of



WINTER SCENE

RAYMOND E. HANSON

Second Prize, Second Annual Competition our readers will plan to produce one or more prints, the best of which they are capable, for entry at that time. Don't be afraid to send in your work because you think it is not good enough. Every competition and exhibition brings out new blood, and it is interesting to note that of the fourteen prize winners this year only one, H. Y. Summons, of Virginia Water, England, was a prize winner last year. Several of the contestants who won prizes last year did not enter this year.

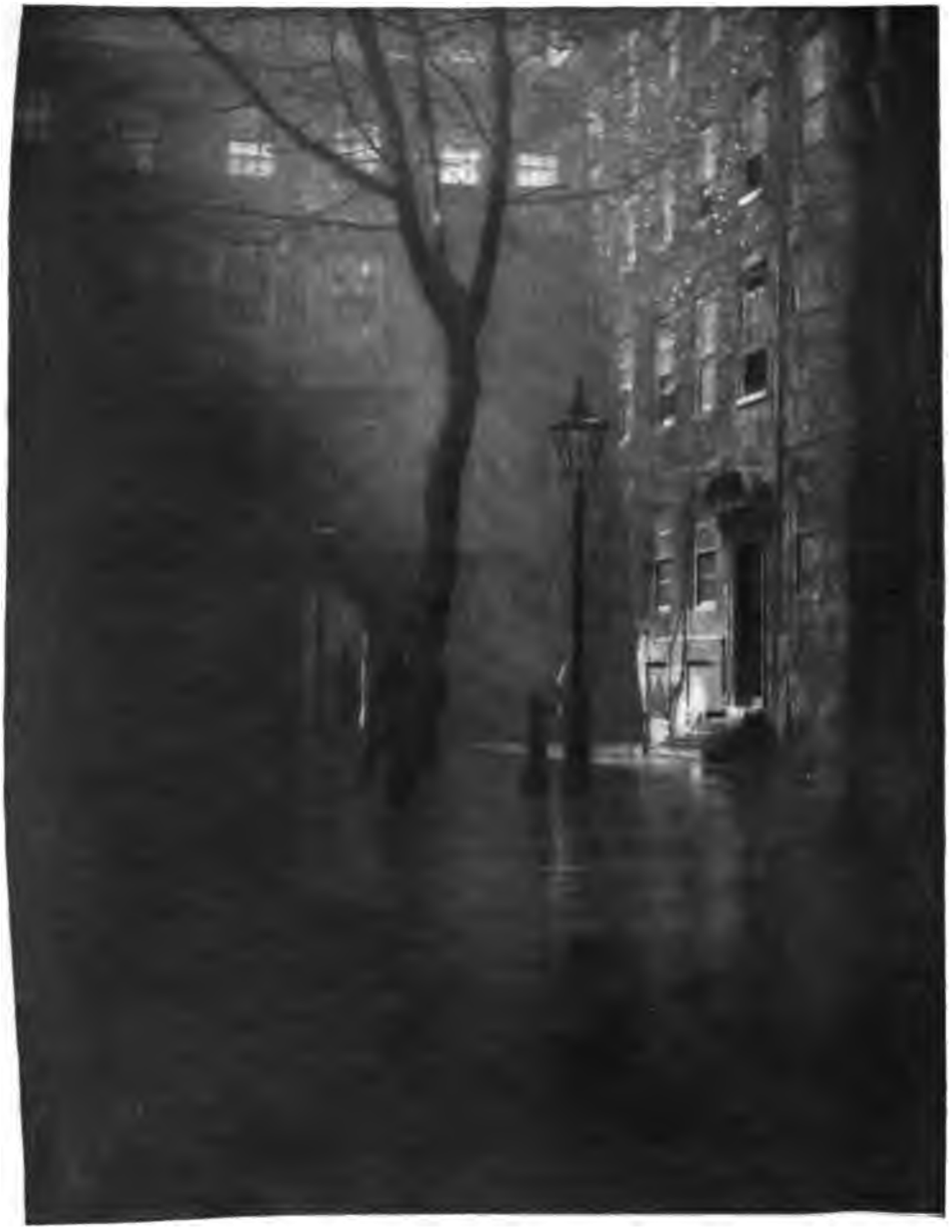
All the prints except the prize winners and Honorable Mentions have been returned to the makers and the Honorable Mention prints will be returned after they have been exhibited as mentioned above.

In accordance with our usual custom, we give in the following paragraphs summaries of the data furnished by the competitors and some remarks on the prints.

In regard to the first prize it seems but fair to say that Mr. Whitehead entered three pictures which were of so nearly equal merit that the judges were for a long time unable to decide between them. Two of them in fact were bracketed for prize award and the question as to which of the two should be awarded first prize was not decided until the last moment. Had the rules allowed it, Mr. Whitehead would undoubtedly have received two prizes. His pictures, which have long won high honors in the English exhibitions and have been frequently reproduced in *Photograms of the Year* and the English pictorial magazines, are characterized by fine rendering of atmospheric conditions, beautiful quality, and carefully composed subjects. The prize picture is simple to the utmost degree, but it depicts the lonesomeness and the sublimity of the moorland under driving storm clouds in the most majestic manner. It is a composite print made from parts of three negatives, all made on Wellington Anti-Screen plates. Naturally exposure data could hardly be given. These negatives were combined to a large negative on an Imperial ordinary plate and the print was made on Vitegas gaslight paper.

The second prize was awarded to Raymond E. Hanson, North Wilmington, Massachusetts, for his print entitled "Winter Scene." This is a rarely beautiful snow scene combining all the qualities which a snow print should have. The exposure is rigorously correct, giving truthful values throughout. The snow is brilliant and full of detail and character. The distant woods have the softness and greyness which they should have, and not the black shadows so frequently seen in snow pictures. The curving lines of the composition are delightfully arranged and the foreground is beautifully broken up by the wind-carved snow. As a whole and in detail, the print is beautifully executed, but it falls behind Mr. Whitehead's print, which has equal technical excellence, in the one point of less grandeur of conception. This print was made in Wilmington, Massachusetts, with a 3¼ x 4¼ Graflex fitted with a Smith Semi-achromat of 6½ inches focal length. The exposure, at 3.30 P. M. in January in sunlight, was 1-10 second at *f*:8, using a three-times filter. The Orthonon plate was developed in pyro and printed on Artura Carbon Black D.

The third prize was awarded to George F. Prior of Chingford, England, for his print entitled "April Sunshine, Pump Court, Temple." This print is one of the highest technical excellence. Its range embraces the mild highlights of sunshine falling on red brick and the deep shadows of a narrow courtyard on a wet day, where the spot of sunlight thrown through a rift in the cloud serves only to accentuate the general gloom. The quality of wet pavement and foggy atmosphere is well shown. The composition is pleasing and the subject interesting. Made with a quarter plate Reflex camera fitted with a Cooke Aviar lens of 6 inches' focal length. The exposure, at noon in April, with two or three seconds of sunshine after a rain storm, was 1-25 second at *f*:4.5. The Wellington backed, Anti-screen plate was developed in pyro-soda, Wellington formula, and printed on Illingworth



APRIL SUNSHINE, PUMP COURT, TEMPLE

GEORGE F. PRIOR

Third Prize, Second Annual Competition

Cream Smooth Bromide, sulphide toned, chrome stained slightly.

The fourth prize was awarded to "Portrait of a Player" by Wayne Albee of Seattle, Washington. The outstanding character of this portrait is the one which is perhaps most subtle — the simplicity and majesty which make one feel that the subject is of extraordinary height. Few portraitists would have the boldness to drape a man in a black cloak and give him as simple and severe a line as is here shown. The picture cannot be explained; it must be felt, but each of the judges feels that it was far superior to any other portrait in the competition. Made in Seattle, Washington, with a 5 x 7 view camera fitted with a Heliar lens of 14 inches' focal length. The exposure was 5 seconds at *f*:8 at 3 P. M. on a cloudy day in December. The Eastman Portrait Film was developed in pyro and printed on Artura Carbon Black.

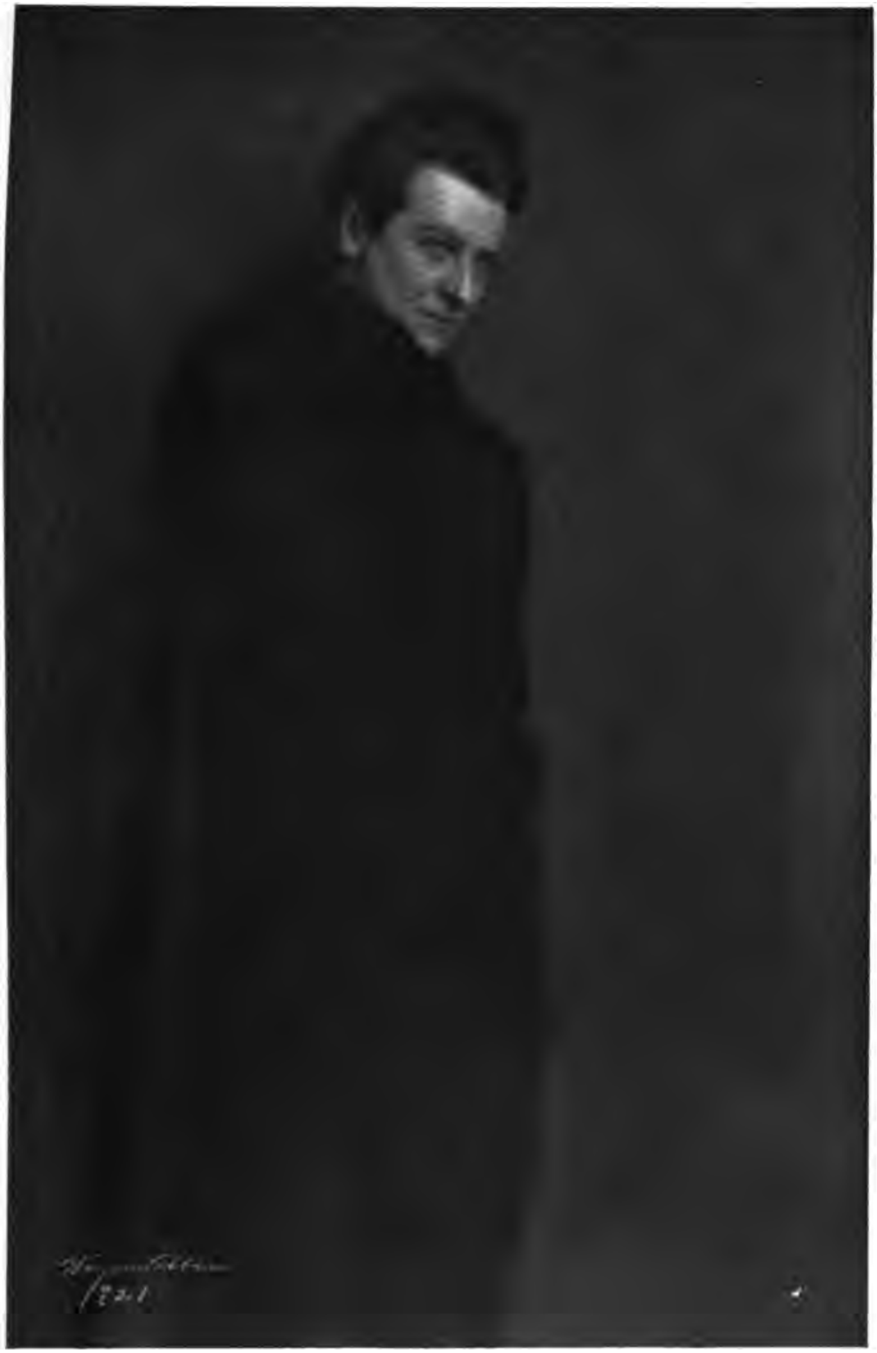
The prizes from fifth to fourteenth are of equal importance and the alphabetical arrangement is adopted to avoid the necessity of arranging them in an assumed order of merit.

"Wanderers from Home," by P. Douglas Anderson, is one of a series by this maker from which the judges found it difficult to select the most interesting. The landscape is arranged in a way which might be duplicated by most workers with little trouble. A tree overlooking a distant vista is not unusual. The placing of the tree is pleasing, but the introduction of the two boys at the correct spot is the most interesting part of the picture. The two figures are in themselves contrasting and hence make a most interesting center of interest. Made in Santa Cruz with a 4 x 5 Sanderson camera fitted with a Verito lens of 9 inches' focal length. The exposure, at 2.30 P. M. in August with bright sunlight, was 1-30 second using a three-times filter. The Standard Orthonon plate was developed in pyro in a tank and printed on Artura Carbon Black E Rough.

"The Golden Pathway," by Alfred Brinkler of Portland, Maine, is a most pleasing decorative study and it is evident that the Portland Camera Club has developed a new worker in the grand style, who will be a worthy companion to the prominent workers it already has. This print is a multiple gum in green and golden tones which has beautiful decorative quality, but unfortunately will not make the same impression in the reproduction as in the original. Heavy shadows which are transparent in a large multiple gum print are apt to appear dull and lifeless in a half-tone reproduction. Nevertheless, it can be appreciated that Mr. Brinkler's pattern is most interesting and that his composition is excellent. This picture was made at Prout's Neck, Maine, with a 2¼ x 2¼ Icarette camera fitted with a Zeiss Tessar lens of 3 inches focal length. The exposure, between six and seven P. M. in June, in bright sunlight, was one second at *f*:11. The Eastman film was developed in Elon-hydrochinon and printed in multiple gum.

In "Looking Backward," Dr. C. A. Eaton of Boston has produced a very excellent snow scene. While he has not shown quite as much surface texture in his snow foreground as is seen in the second prize picture, he has successfully made us feel the atmosphere of a dull day and it is perhaps harder to reproduce snow with truthful feeling in dull light than on a day of sunshine. At any rate, his composition is pleasing; his planes recede in truthful fashion; and his distance takes its proper place in the picture. Made in New Hampshire with a 1⅝ x 2½ Goerz vest pocket camera fitted with a Dogmar 4.5 lens of 3 inches' focal length. The exposure, in January, with strong sunlight through light clouds at 1 P. M., was 1-25 second at *f*:6.3 with a five-times filter. The Eastman film was developed in Tancol and printed on Wellington Bromide Soft White Chamois.

Waldemar Eide of Stavanger, Norway, entered four prints of which three figure studies received Honorable Mention. The prize picture, called "Early Morning," marvelously



PORTRAIT OF A PLAYER

WAYNE ALBEE

Fourth Prize, Second Annual Competition reproduces the effect of haze, a most difficult task for the photographer. His ships recede with the distance and the hills surrounding the harbor are most subtly shown through the slight mist. It is a subject which an etcher would delight in, but rendered with a quality and softness which etching could not achieve. Made in Stavanger Harbor, Norway, with a 13 x 18 cm camera fitted with Erneman D. C. anastigmat. The exposure, at 10 A. M. in October, in misty light, was 1-10 second at *f*:9. The Eastman Ortho plate was developed in metol-hydrochinon and printed on gaslight paper.

"The Dockman," by Julius F. Graether of Newark, New Jersey, is an interesting marine study of excellent quality and simple and pleasing composition. The subject was well imagined and truthfully rendered. This picture was printed from three negatives, the figure being taken in New York City, the boat in New London, Connecticut, and the sky in Newark, N. J. It was made with a 1⅝ x 2½ O-Graphic camera fitted with a Kodak anastigmat .The exposures at 11 A. M. and 1 P. M. in July and October, were 1-70 second in fair light at *f*:6.8. The Eastman roll film was developed in amidol and printed on Artura Carbon Black.

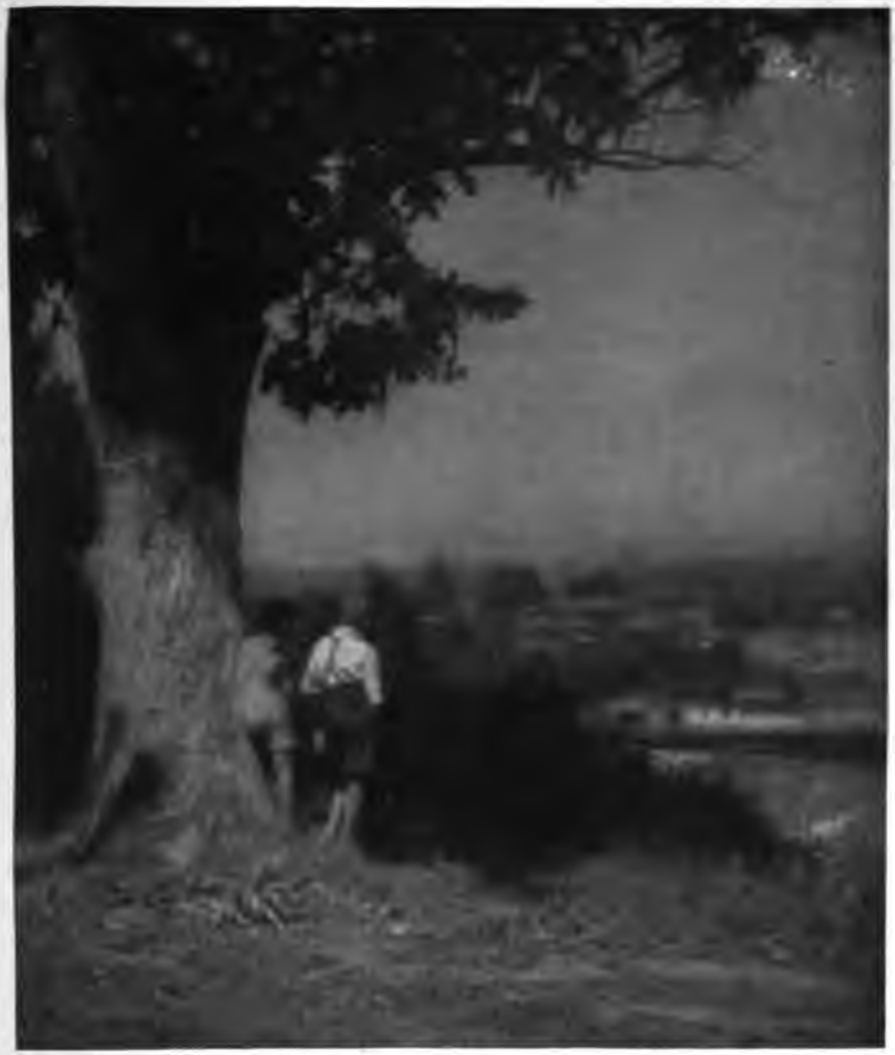
"Eventide," by Johannes Krone of Vienna, is a charming reproduction of a scene which contained so many pictorial elements that the fusion into a coherent whole was a task of more than usual difficulty. Yet the various interesting elements have been so grouped that attention is inevitably carried to a single spot in the picture, while at the same time each portion of the print has interest and charm of its own. It is a print rather of the old fashioned type than the modern American style of simplicity and overwhelming interest on a single feature, and leads us to wonder if it is not time for the American photographer to consider the possibility of interest of subject as well as strength of pattern. Taken in Semmering, Austria, with a 6.5 x 9 cm camera fitted with a Zeiss Tessar *f*:4.5 lens of 12 cm focal length. The exposure, at 7.30 in July, with evening light, was 1-25 second. The Agfa film was developed in Agfa Rodinal and printed on Mimosa Velotype.

"The Curb Market, New York," by Joseph Petrocelli, is a fine study which might easily have been a mere record but has been turned into a picture by the introduction of atmosphere. The innumerable details have been compressed into masses of simple tone, and the record has become a picture by this simplification. Taken in New York City with a 2¼ x 3¼ Ica camera fitted with a Carl Zeiss lens of 4⅛ inches' focal length. The exposure, at 1 P. M. in April, with very poor light, was 1-50 second at *f*:4.5. The Eastman roll film was developed in metol-hydrochinon and printed on Wellington Bromoil.

Miss M. Shelley of London has carried us to faraway Ceylon with her landscape. It is a fine bit of work, showing delightful quality and very pleasing atmospheric perspective. Made with a Lancaster half-plate camera fitted with an Aldis anastigmat lens of 8 inches' focal length. The exposure, at 9.30 A. M. in November, with sunlight, was two seconds at *f*:32. The orthochromatic plate, used with a yellow screen, was developed in pyro-soda and printed on Royal.

H. Y. Summons shows us the West Gate at Canterbury in a print which displays much personal feeling in the interpretation of the topography. By suppressing his detail and submerging his mediaeval towers in a murky gloom, he has given us a feeling of mystery, and compelled attention to the highlights on the towers. This picture was made in England with a vest pocket camera fitted with an R. R. lens. The exposure was 1-15 second at *f*:8 with a three-times filter. The Kodak film was developed in M. Q. and printed on Verotype No. 26, a contact print from an enlarged negative.

"Friends of the Footlights," by Lionel Wood of Brighton, England, is a charming group, a complexity of lines and interests handled in a masterly fashion. The two



WANDERERS FROM HOME
P. DOUGLAS ANDERSON
Fifth Prize. Second Annual Competition

figures are brought together into a single whole in such a way that there can be no division of interest or attention. The handling of the hands and arms is especially noteworthy. This was made with a half plate Reflex camera fitted with a Meyer lens of 16 inches' focal length. The exposure, with a half-watt light, was one second at *f*:3. The Marion Iris-Record plate was developed in Azol and printed on Rajah cream matt card.

THE BACKGROUND IN PORTRAITURE

EARL E. JOHNSTON

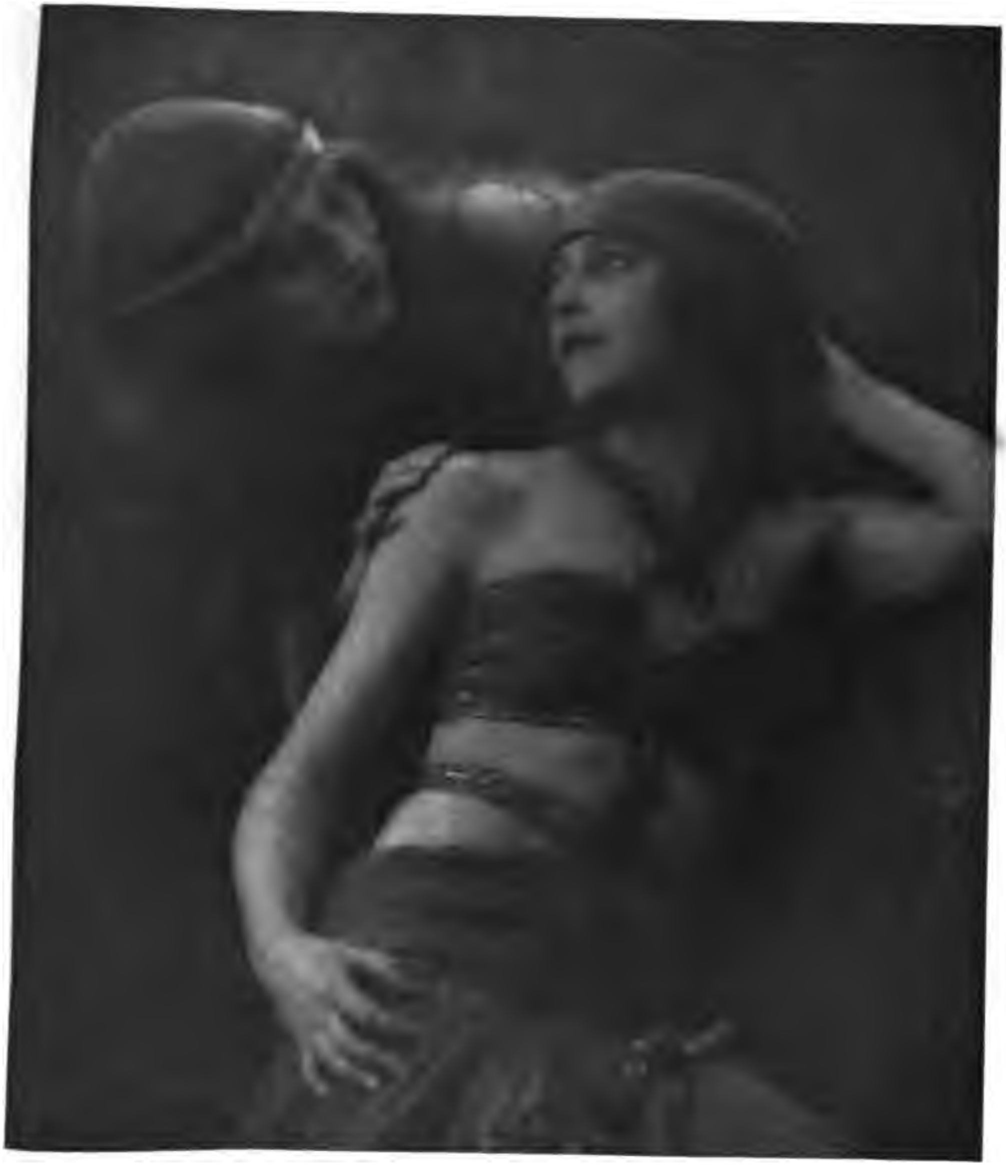
ONE of the problems in portraiture that does not always receive as much consideration as it should is the contrast of the figure with the background. A good general rule to observe in this matter is that the figure should always merge into the background at some part and, generally, in more places than one. Only in this way can the figure and the background be made parts of one scheme of light and shade. The difficulty of getting the light and shade of the background properly to relieve the figure is one that frequently occurs. For half-lengths and head and shoulder portraits it may practically be overcome by using a number of grounds of slightly varying tones.

In his "Treatise on Painting," Leonardo da Vinci says: "I would have the painter to accommodate that part which is enlightened so as to terminate upon something dark, and to manage the dark parts so that they terminate on a light ground." And, in another place, "The ground which surrounds the figures in any painting ought to be darker than the light parts of those figures and lighter than the shadowed part." This method will give the maximum of relief and, of course, great force and vigor in a portrait, but it is quite evident that Leonardo meant it to be used with discretion, for in another chapter he says: " A face placed in the dark part of a room acquires great additional grace by means of light and shadow. The shadowed part of the face blends with the darkness of the ground and the light part receives an increase of brightness from the open air, the shadows on this side becoming almost insensible, and from this augmentation of light and shadow the face has much relief and acquires great beauty."

Henry Inman, an eminent American painter, advocated this relieving of dark with dark and light with light in one of his "Discourses." Mr. Inman, however, adopted both methods and, doubtless, always selected the one he considered to be appropriate to the subject of his portrait.

The appropriateness of the background is an important matter that is often lost sight of. Not only in choice of background and in force of light and shade generally should discrimination be shown between portraits of men and those of ladies and children, but the accessories that are included in the picture and the occupation of the subject also require careful thought.

A really conscientious photographer will find out what interests his sitter and so secure fitness or absence of incongruity of pose, expression and occupation. This must be so if the portraits are to express individuality. A footnote to Leonardo's instructions as to representing children, old men, old women, and so on, says: "The author here speaks of unpolished nature: and, indeed, it is from such subjects only that the genuine and characteristic operations of nature are to be learnt. It is the effect of education to correct the natural peculiarities and defects, and, by doing so, to assimilate one person to the rest of



FRIENDS OF THE FOOTLIGHTS
LIONEL WOOD, F. R. P. S.
Fifth Prize, Second Annual Competition

the world." The tendency in commercial photography is to eliminate "the natural peculiarities and defects" and, though one may be aiming at a little idealism, care should be taken to avoid reducing all portraits to a "dead level of commonplace excellence," as John W. Jarvis phrased it.

The influence of the background on exposure has been repeatedly mentioned by many writers on photographic subjects. In general a rather longer exposure should be given for a head and shoulders portrait when using a dark background than when a light one is employed. The highlights on the face are accentuated by the dark ground and care should be taken not to carry such exposures too far in development or there may be too much contrast in the negative.

The arrangement of the lines in the picture and the disposition of the light and shade are problems that must be carefully considered and we are still left with the question of focusing or the sharpness or softness of the definition.

We have seen that the lighting may be so managed as to emphasize or subdue certain parts and we know that a diffused or softened outline will be much less insistent than one which is sharp and clean cut. Certain parts of the picture may call for a sharp rendering, others, of less importance, may be less sharp. As a general rule, for the best pictorial effect, nothing should really be quite sharp except the eyes in a portrait, but, it will be found in the case of commercial art work, that a more general crispness is demanded. It is, moreover, almost impossible when working with the usual portrait lenses, or with anastigmats, aplanats or rectilinears, even at large apertures, to keep everything except the face softened in definition. Wherever any part of the subject is in the same plane, there will be equal definition. In fact the problem of arranging the figure suitably with regard to that particular plane which the lens is defining is one of the earliest difficulties met with in portrait photography.

The more nearly the important parts of the figure can be placed in one plane so that they may be in focus at the same time and with the plate in its normal position, that is, at right angles to the principal axis of the lens, the more accurate will be the proportions of the various parts of the picture; the hands will be proportionate to the size of the face, and so on.

The swing-back may sometimes be used to get parts of the figure into focus that are in another plane from that of the face, but, when that is done, inaccuracies of scale are, at once, introduced. It will be apparent that if the head is, let us say, fifteen feet from the lens and is sharply focused, and if the hands are thirteen feet six inches from the lens and are sharp at the same time, they will be represented on a slightly larger scale than the face, just as a print that is being copied is brought nearer to the copying lens when we wish to make it larger on the focusing screen. If the hands are not sharp, however, owing to insufficient depth in the large aperture lens, and we employ the swing-back to make them so, the scale is still further increased, because the focusing screen is moved further from the lens and the rays forming the image of the hands diverge still further before reaching the screen. This is the case with any lens used for every-day practical work in the studio, but when lenses of too short focal length are employed, the fault exists in its very worst form.

I have not seen this point emphasized or even mentioned in any articles on portraiture, but it seems to me to be an important one and a frequent cause of the complaint that the hands are too large. It is one, of course, with which anyone who has studied the optical properties of lenses is quite familiar in theory. (This matter of inaccuracy of scale is

EARLY MORNING

WALDEMAR EIDE

Fifth Prize. Second Annual Competition covered, we think, by the frequently given advice to use long focus lenses for portraiture. — Ed.)

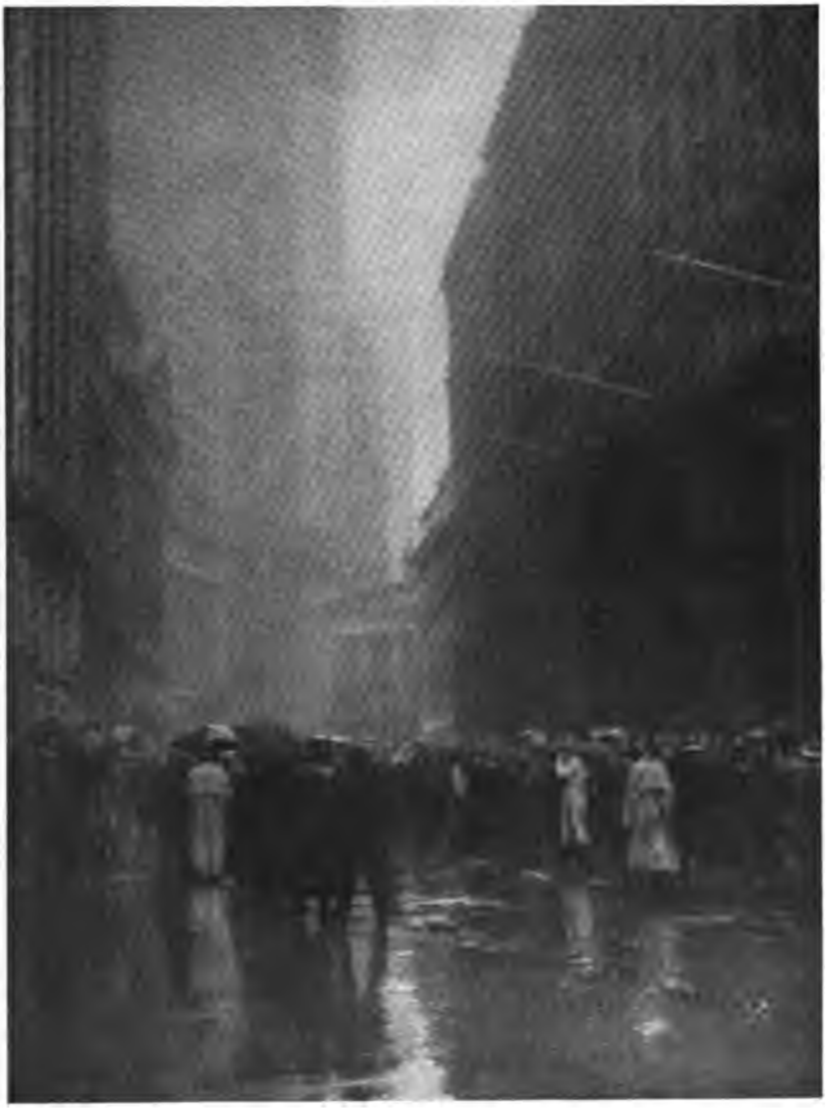
Many professional photographers recommend the use of the side-swing as a means of getting the shoulders into focus when the figure is turned to a three-quarter position. The swinging of the back in any direction when taking portraits seems to me to be undesirable and likely to produce some distortion. The following simple experiment may be tried. Place the camera on a copying board and adjust on the perpendicular easel a perfectly rectangular piece of white card or paper. Now, with the swing-back vertical, focus this sharply and then swing the back either vertically or sideways. The image of the rectangular card will no longer be true but will be wider across one end or across one side according to the direction in which the back was swung. This can be measured, and what occurs with the card must equally occur with the human sitter. (With a long focus lens and at the distance at which such a lens would be used in making a portrait, the amount of distortion caused by the use of the swing-back would be so slight as to be practically negligible and we are inclined to think that the advantages gained by equalizing the definition more than offset this slight drawback. — Ed.)

Apart from the sharpness of the picture, there is to be considered the amount of detail we wish to render. This, of course, depends, principally, upon the lighting and, to some extent, on the surface of the paper on which we propose to print, but it affected also by the length of the exposure. A short exposure will tend to subdue shadow detail and to emphasize the gradation in the highlights. On the other hand, a long exposure will give a softer result and the shadows will be more broken up. It is not desirable to shorten the exposure to such an extent as to produce shadows devoid of detail. Such a course tends to give heavy shadows with no transparency or depth. The exposure demanded will, to a considerable extent, depend upon the subject. Thus, two sitters may be taken in rapid succession with an unaltered light, yet the exposure in one case may be two or three times that of the other. One may be a lady in a white dress in front of a moderate dark background. Full strength of detail in the background is not necessary, but sparkle and good gradations are wanted in the dress. The exposure given may be a trifle more than the dress demands, but not so full as to flatten the highlights. Care must be taken not to develop to too great density. In the second case, with a sitter with a large black hat and black velvet dress, a much fuller exposure will be needed because strength of detail will be expected in what are essential parts of the picture.

CLEANING, RENOVATING, AND REMOUNTING PHOTOGRAPHS

The photographer is often called upon to make the best of a photograph which is not in its state of pristine freshness, usually for the purpose of copying, but sometimes for remounting and framing only. It is hardly necessary to remind a man of business ability that it is much better to secure an order for copying when possible, and to this end it is a good plan to have ready for instant production a rather disreputable-looking original and a very excellent reproduction of it. However, the question is the restoration of deteriorated photographs, no matter what their ultimate destiny is to be.

The simpler the treatment which can be applied, the safer and the more likely to be successful. Some writers recommend chemical treatment to restore vigor to a faded



THE CURB MARKET, NEW YORK
JOSEPH PETROCELLI
Fifth Prize, Second Annual Competition

print, but it is a risky business. One never knows what the exact condition of a print is and how it will behave on being intensified, which is practically what has to be done. It must always be remembered that an exaggerated value is usually placed upon an old photograph by its owner, and that an unsuccessful attempt at restoration will result in a loss of reputation, which is many times worse than the loss of any profit which might be made upon the job. Hence I counsel that the greatest caution be exercised in dealing with customers' prints, and that rather too little be attempted than that any risk of injury be run.

Before trying any other method of restoration, the first thing to be done with a print, no matter by what process it may be made, is to get rid of what may be termed adherent dirt — that is to say, dirt which cannot be removed by gentle friction with a soft rag or, better still, a pad of cotton-wool. This is best effected by gently dabbing the surface with a fair-sized lump of stiff dough. I got the idea of this from watching a paper-hanger clean a wall which was so dirty that the pattern on the paper was hardly visible. He took a lump of stiff dough and dabbed it on the paper until it lifted the dirt, and if it did not restore the original whiteness, it made what was nearly black appear as a very light gray. The dough must be spread out and folded over as the surface becomes soiled, until the whole mass is too dirty to be of further service. This, however, is hardly likely to occur when cleaning photographs. The dough is made of a cheap quality of flour (which is more glutinous than "pastry whites") mixed with cold water and kneaded until it does not stick to the fingers. If too wet a little more flour must be added until the mass is elastic and quite clean to handle. This dough may be used with safety upon any print, silver, carbon, platinum, or bromide, and will often be found to do all that is necessary. With albumenized prints, which are usually covered with fine cracks, it is especially good. If any liquid be employed the dirt is washed into the cracks, and the last state of that print is worse than the first, but the dough just lifts the dirt and lifts it out of the cracks as well as from the surface.

After this treatment we must consider any obstinate defects. These are possibly due to grease, and in such case there is nothing better than a liberal application of benzol, or even of ordinary gasoline. This will remove grease with any dirt which may be incorporated with it, and will not injure any print made by the processes in general use. Naturally, oil prints or bromoils must not be treated with gasoline or any similar liquid, or the image will be totally destroyed.

The process by which the print is made naturally influences the treatment which may be applied. Bromides are among the first to show deterioration and require the greatest care in their renovation. There is frequently a surface tarnish which imparts a metallic appearance to the shadows, and this is best dealt with by friction with a pad of cotton-wool and a little metal polish, such as "Globe." This will rapidly remove the tarnish, but should be followed by a careful cleaning with gasoline or benzol to remove any traces of the polish. A coating of white wax dissolved in benzol or turpentine will restore the surface and prevent reappearance of the tarnish for a considerable period.

Carbon prints give little trouble. As a rule, a wash with gasoline or a rub with a pad charged with turpentine and wax will remove all dirt and give a fresh appearance. Carbon prints are easily cleaned; a pad of cotton-wool moistened with turpentine or benzol will immediately remove any dirt. It is necessary to avoid using any bleaching liquid with these, as chloride of lime or any similar compound not only renders the gelatine soluble, but may alter the color of the pigment, I have found the Globe metal polish useful for cleaning bromides and carbons, very obstinate stains giving way to it. Too much friction

THE GOLDEN PATHWAY
ALFRED BRINKLER
Fifth Prize, Second Annual Competition

EVENTIDE JOHANNES KRONE

Fifth Prize, Second Annual Competition

must be avoided, or the image will be affected — in fact, it is possible to reduce a bromide locally in this way; but there is always a tendency for a granularity to appear. Platinum prints are more delicate subjects, and will not, as a rule, stand any friction. In most cases the dough treatment will be sufficient, but if there be a considerable amount of yellowing a clearing bath of hydrochloric acid may be found necessary. If the stain does not yield to the acid, a bath of diluted "eau de javelle" will usually answer. It is necessary to be very cautious when using this, or a weak solution of chloride of lime, as there is a tendency to rot the paper. Immersion in a 5 per cent. solution of hypo will neutralize the chlorine and will not injure a platinum image. Naturally, the print must be removed from its mount before treatment. Platinum prints are easily damaged by friction, so that only the margins should be cleaned with rubber or eraser. Even a too vigorous rubbing with bread crumbs will remove the more delicate tones.

Bromide and other gelatine surface papers are often greatly improved by gently rubbing with a pad of cotton-wool moistened with denatured alcohol. This will usually remove the tarry film which is deposited when a photograph is kept in a smoky atmosphere. Benzol or gasoline may be substituted for the alcohol, but, owing to their extremely volatile nature, are not so convenient to use. A soft eraser may be used on matt surface bromides, and for small obstinate patches the small glass brushes sold for erasing typewriting answer well. Collodio-chloride papers, which include many of the self-toning variety, must not be touched with alcohol, or the image will be destroyed. The dough

IN THE HILLS OF CEYLON Miss M. Shelley

Fifth Prize, Second Annual Competition

treatment is usually sufficient, as the surface is not absorbent.

Most prints are improved after cleaning by being treated with a little waxing compound, or encaustic paste, as it used to be called. White wax dissolved in turpentine or benzol to the consistence of pomatum answers as well as the commercial article. This should be rubbed on sparingly with a tuft of cotton-wool and polished off with a soft silk or cambric rag. Usually any spotting or working up is removed in the process and cleaning and must be replaced before the final waxing.

Colored work requires delicate treatment, and it is hardly possible to do more than to rub very gently with fairly dry bread-crumbs, desisting if there is any sign of the color moving. The margins may be cleaned with dough or rubber.

With regard to remounting, I strongly recommend, if possible, this should be avoided, and that the print should be placed under a cut-out, either of card or paper. If the thick cut-out be objected to, a mount may be made of white or tinted drawing paper and pasted over the original card, an opening being previously cut to fit the print. This can be done very neatly by using the dry-mounting tints which have one side already rendered adhesive. Sometimes the remounting question may be settled by abolishing the margin altogether and framing close up. A very dingy-looking print can often be made to look presentable by framing in a rather heavy dark oak or black moulding.

Unmounting is a ticklish job and is always attended with some risk. Many prints which have endured fairly well rapidly deteriorate after they have been wetted. There is no better way than to lay thick wet blotting paper between the prints and to put the pile under light pressure for twenty-four hours; if they will not lift, damp the blotting-paper again and put by till next day. If they are still obdurate nothing can be done but to split the board until it is thin enough to be penetrated by moisture from the back, when the mountant will generally soften; but in some cases the print will have to be laid face down upon a glass and the mount rubbed away with the fingers. It is often possible to remove a print from the mount without wetting by splitting the card until it is quite flexible; then the print must be laid face down on a smooth surface and the mount torn off. If the print is kept flat only the mount will tear, but if you attempt to pull the print off the mount the print will tear. It is quite easy to remove a fragile postage stamp from a tough manila envelope by observing this principle. Any small portions of adhering mount should be removed with very fine sand paper and the print dry-mounted upon the new card, if possible. — *British Journal of Photography.*

SOFTNESS OR DIFFUSION OF FOCUS

E. J. WALL, F. C. S., F. R. P. S.

IT SEEMS but a few years ago that P. H. Emerson fluttered the dovecotes of photography with his "Naturalistic Photography," a protest against the biting sharpness of the *f*:64 school that would show us the venation of a leaf half a mile off. It is true that he was not the first to use softness of definition, though it is an open question whether D. O. Hill, Rejlander, Salomon and Mrs. Cameron, to name the most prominent workers in this style, did not obtain their results rather in spite of themselves than by any deliberate design, being actually limited by the imperfections of their tool, the lens; for we know that Mrs. Cameron used a single landscape lens of two inches diameter, from which the stop was removed in order that shorter exposures might be given.

Since that time, many have been the methods adopted to attain that softness that is supposed to be the hall-mark of the artist. Emerson's work was distinctive and really artistic; but he had many imitators who, incapable of appreciating that composition and values lay at the bottom of his work, went one better in their own estimation, and we had that wave of "fuzziness" that not only became tiresome, but actually irritating.

Emerson's principle may be said to have been differential focusing; that is, he contended that the principal object only should be sharp, while all other planes and objects should be subordinated. He used aplanatic lenses of large aperture and condemned pinholes and the introduction of spherical aberration as inadmissible, as the general softening, thus caused, falsified tone.

Geo. Davison, one of the leaders of the school of general diffusion, contended, on the other hand, that the equal diffusion given by pinholes was legitimate and desirable. Naturally there were some who went to the extreme in this direction, and probably some of the worst things were the "fuzzygraphs" of Rowland Briant, which were made with cylindrical spectacle lenses with slit diaphragms of small dimensions, about one-eighth of an inch long and one-fortieth wide.

Claudet, in 1866, varied the focus of the lens during the exposure, and in the same

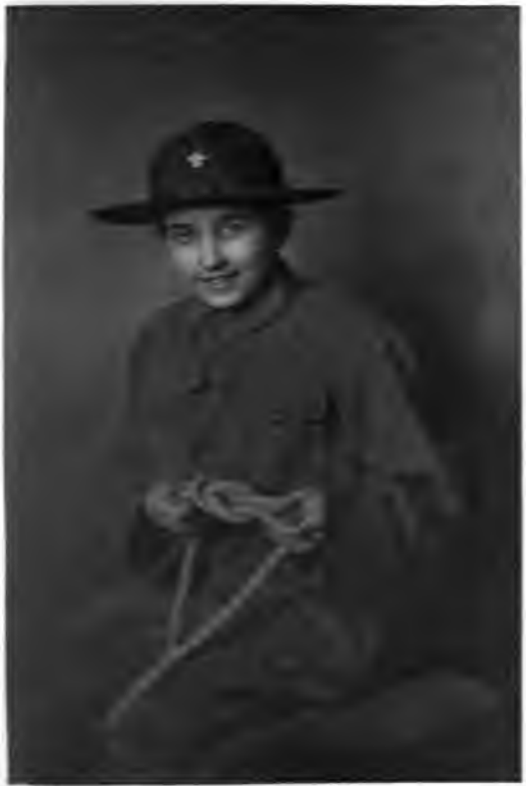


Fig. 1

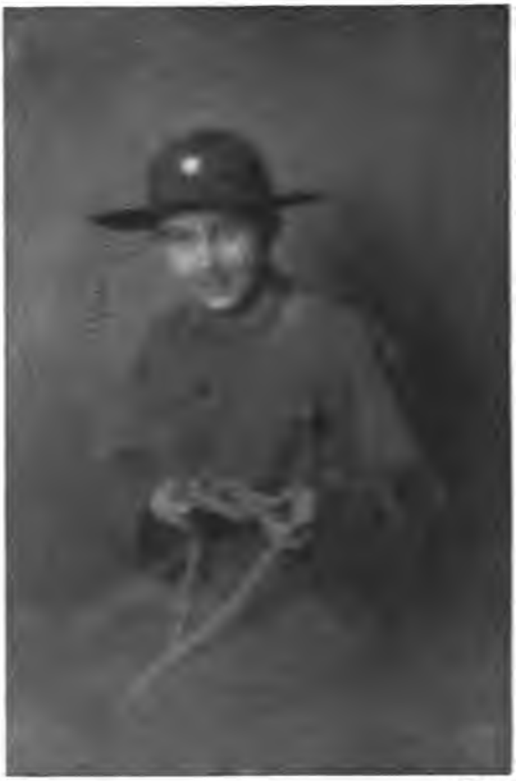


Fig. 2

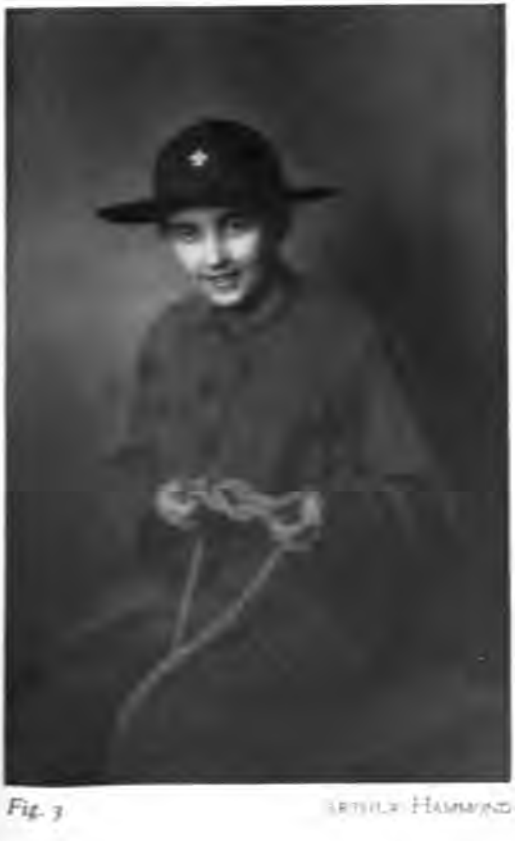


Fig. 3

ARTHUR HAMMOND

year Dallmeyer introduced his patent portrait lens, with which, by unscrewing the posterior lens of the back combination, spherical aberration could be introduced at will into the image, thus obtaining the same effect as Claudet did by his lens-shifting, which alternately threw the image in and out of focus.

Dallmeyer's lens was a modification of the Petzval portrait lens, and the back combination was practically reversed, that is to say the flint lens was outside and the positive crown inside; the slight separation of the negative flint from the crown introduced positive spherical aberration; an idea which had been actually first suggested by Traill Taylor in 1864 (*Brit. J. Phot.*, 1880, **27**, 403, 407). Taylor, Taylor & Hobson introduced an adjustable Cooke lens, and we have now the soft focus lenses of Smith, Wollensak, Struss, the Kalosat quartz lens and the Plastigmat of Bausch & Lomb; to say nothing of the older anachromatic lenses of Pulligny & Puyo ("*Les Objectifs d'Artiste,*" by L. de Pulligny & C. Puyo, Paris, 1906; *Brit. J. Phot.*, 1906, **53**, 184) and the Dallmeyer-Bergheim lens, which may justly be classed among the "monocles" or spectacle lenses, which were so much in vogue in the early nineties.

Boissonas in 1900 used two lenses, placed side by side and so arranged as to give one image; but, as they were juxtaposed horizontally, while the images were more or less coincident horizontally, vertical parallax made its appearance. There have been several suggestions for using accessory tricks and Bigelow in 1890 (*St. Louis Phot.*, 1890, 127) proposed to use diaphragms covered with wire netting, and H. Kuhn ((*Jahrbuch*, 1897, **11**, 285) went one better and used several wire nettings. Lenhardt & Bushbeck (*Jahrbuch*, 1896, **10**, 323) introduced, in the diaphragm plane, glass ruled with spiral or star-shaped figures. Quite recently C. W. Frederick of the Eastman Kodak Co. also introduced (*Brit. J. Phot.*, 1920, **67**, 509) a glass screen on which three systems of linear grooves are ground at angles of 120 degrees from each other; the grooves of each system are spaced at equal intervals apart, but are of progressively increasing depth from the center outwards. The finished pattern shows hexagonal areas of clear glass constituting about two-thirds of the area of the entire screen. Thus two-thirds of the light is allowed to form a sharp image, and the remaining one-third a succession of soft images varying in diffuseness according to the successive depths of the grooves. The screen is said to give soft effects without the trace of a double line, and at the same time definition that does not fail under a magnifier. This, however, was for enlarging.

Other methods have also been suggested, such as shaking the camera during exposure, by means of a string fastened to the front and the floor, and causing this to vibrate. Kurz of New York (*Brit. J. Phot.*, 1880, **27**, 304, 407) introduced "Vibrotypes," which were produced by means of a row of lighted gas jets below the lens, which obviously sent waves of hot air in front of the camera. Everyone is probably familiar with the device of inserting a sheet of celluloid or glass between negative and paper while printing. E. H. Anthony (*Phot. News*, 1873, **17**, 438) suggested the use first of a small stop and then of a large one during the exposure, a trick that would only be effective if the lens suffered from spherical aberration.

About 1874, Denier, a Russian artist, was asking a pretty heavy fee for a secret method of obtaining soft prints (*Phot. News*, 1873, **17**, 199) and various ideas were put forward by which the same results could be obtained; one was the insertion of a sheet of plate glass between the lens and sensitive surface, another was to rub the plate glass with oil, and Engelmann (*Phot. Korr.*, 1873, **17**, 537) proposed to give half the exposure with oiled ground glass in front of the plate and then to remove this. Denier's method was patented in Russia, and the idea gradually leaked out that he used two negatives in super-

THE DOCKMAN — JULIUS F. GRAETHER

Fifth Prize, Second Annual Competition

position, and Szekeley (*Phot. Korr.*, 1873, **17**, 50) actually obtained provisional protection in Austria for a patent for the use of two negatives. B. J. Edwards (*Phot. News*, 1874, **18**, 306) coated the back of the negative with bichromated honey and sugar, exposed to light through the negative and then dusted on graphite, and Constant suggested collodio-chloride emulsion for the same purpose. An editorial article (*Brit. J. Phot.*, 1889, **36**, 789) suggested that two negatives, duplicates of each other, should be used and developed to only half the requisite density, and also the coating of a plate on both sides, giving half the exposure with the lens in focus, one quarter with it racked back and the remainder with it racked forward. Another method was printing to half the necessary depth, then inserting a sheet of glass between the negative and print, and special printing frames were introduced in America for this purpose. Koller (*Phot. News*, 1873, **17**, 91) proposed to make a duplicate negative on paper and bind this in contact with the back of the original negative. The idea of using two sensitive surfaces was patented by J. Kirk (*U. S. Pat.*, 136, 439, 1873; *Phot. News*, 1873, **18**, 225), for he coated both sides of the glass with collodion and then sensitized in the usual way. Almost simultaneously an "Amateur Canadian" (*Phot. News*, 1873, **18**, 211, 322; *Phot. Times*, 1873, **3**, 103) described the same process; Kirk called his process "Brilliant Photography." A. Hommel two years later (*Eng. Pat.*, 3,059, 1875; *Brit. J. Phot.*, 1876, **23**, 351) patented precisely the same idea and called the process "Photo-plasto-graphy." S. Lacey & H. Fowler (*Eng. Pat.*, 27,732, 1913; *Brit. J. Phot.*, 1914, **61**, 669) specifically claim a double-coated plate, with the front film as thick as possible, for artistic work only and disclaim the use of the double-coating for any other purpose.

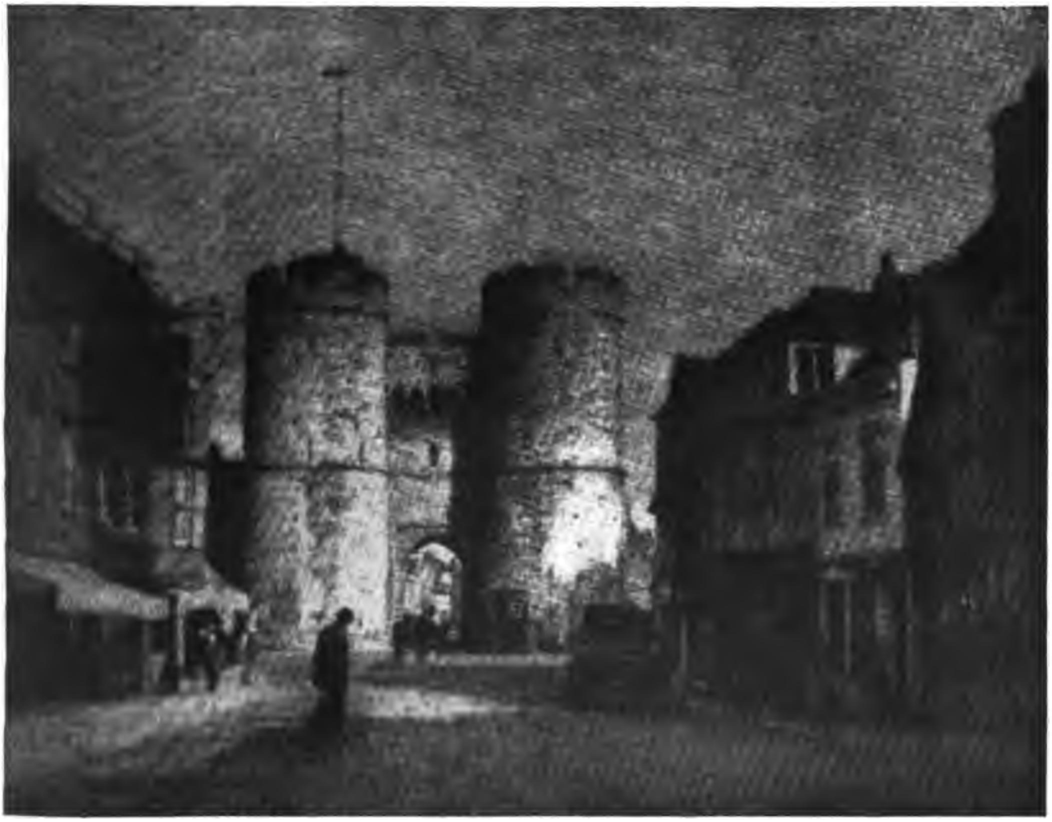
It would take us too far afield to record all the patents for double-coated plates and films, though most of these, like those of Warnerke, Roche and Anthony of 1885, merely used the two coats to equalize the unevenness of the support. Hannibal Goodwin in his original patent describes the use of celluloid coated on both sides, and Nowicki of Paris, in 1888, and Grieshaber in 1890, introduced celluloid thus coated. For color photography it has become one of the leading methods, especially for the two-color cinematography process, and for X-ray work too it is doing valuable service.

Recently this subject has cropped up again in France and G. Cromer (*Bull. Soc. franç. Phot.*, 1921, **63**, 50) has proposed the use of lenses of very wide aperture, from 4 to 5 inches, in order to attain the stereoscopic effect of roundness. His first essays were with a black card fastened to the front lens, covering about one-fourth of the glass, then this disc was placed in the diaphragm; then a transparent disc was also used here, but it was found to fog the image. His final plan seems to be to interpose between the lens and plate a transparent disc, a sheet of gelatine or glass, "mais imparfait comme matiere et comme surfaces," imperfect in material and as to the surfaces. The gelatine sheets were to be from 0.006 to 0.012 inches in thickness and he also suggests that microscopic cover glasses can be used. It is clear that the sole purpose of this device is to slightly alter the path of the rays so that a sharp image will not be obtained, and varying the distance between the lens and the interposed sheet varies the sharpness of the images.

M. E. Artigue (*Rev. Franç. Phot.*, 1921, **2**, 229), who is well-known for his Velour or gum-bichromate paper, has proposed a modification of the old double-coating, that is to use two plates in contact with their sensitive surfaces towards the lens, the front film being in sharp focus. A somewhat full exposure is given and the negatives developed so that the front plate is somewhat thin in character, while the back one is fully developed; more exposure than usual, about 50 per cent is given, so as to have the whole of the image recorded on the rear plate as well as the front one.

The want of sharpness or "flou" of the rear image is obviously dependent on the thickness of the glass of the front plate and the physical character of the emulsion, that is to say, on the diffusion of the incident light by the "grain" of the silver salt. The increase of exposure is also dependent on the absorption of the active light, which may be approximately assumed to be 66 per cent. Thus it will be seen that the more transparent the front emulsion, the less the diffusion of the rear image, and this is independent of the thickness of the glass, though naturally this plays an important role in the diffusion of the image; the two phenomena are different, however, the silver grain scattering the incident light, while the thickness of the glass merely places the rear image more or less out of focus. It is somewhat difficult to thus use two plates in some holders and the natural suggestion is to use a celluloid film for the front member, but W. Aspden (*Brit. J. Phot.*, 1921, **68**, 678) states that a film produces the effect of dreadful halation in the rear member, as compared with the general softened effect of a glass plate and suggests that it is due to the gelatine on the back of the film causing far more scatter than its transparency would suggest.

To print from the two negatives, they are brought with their images in careful register, as they were in the camera, and bound together so that they cannot shift; the sharp image must be in contact with the sensitive surface of the paper. The sharp negative gives all the detail, while the rear one gives the values, the modeling and the "envelope," as it is termed. This method opens up innumerable variations either by the use of emul-



CANTERBURY, WEST GATE H. Y. SUMMONS

Fifth Prize, Second Annual Competition

sions of different color sensitiveness or by the use of an interposed film filter, for one could thus use an ordinary plate for the front and a panchromatic for the rear or vice versa with varying effects.

[In making the accompanying illustrations a glass plate and a "portrait film" were placed in the same side of the holder with the plate on the top of the film. A longer exposure than usual was given and in developing the two negatives the top one — the glass plate on which the image was sharply focused — was developed so that it was quite thin, but the under one — the film — was carried as far as it would go. The image on the film was quite diffused, partly because it was separated from the plane of sharp definition by the thickness of the glass and partly on account of the diffusion of the image in passing through the plate. Neither one of the separate prints from the two simultaneously exposed negatives is much good, but by putting them both together in the same printing frame and printing from the two together, with the sharp image next to the paper and the two images registered as accurately as possible, a very satisfactory print can be made. This was made with an old fashioned portrait lens giving clear definition and yet this print has a softness of definition rather similar to that produced by the proper use of a lens of the semi-achromatic type.—*Eds.*]

SPRING THOUGHTS

FREDERICK B. HODGES

A GENTLE presence fills the land when spring is near; it ripples across the tender sky, down over the earth's dullness like a mystic light. When, on a day in March, I stood on a sunny knoll in The Plains, the brown and yellow landscape showed no green or freshness, except a stray bud of arbutus at my feet, down in the hollow some pussy-willows shining, and on beyond in the open woods, a few flowers of hepatica. Nothing else to show spring's nearness except this gentle whisper of life. Even though the landscape was just like the last glimpse I had in November, I could shut my eyes and still know that this was spring; I could feel the shifting lights, the flying shadows, the taste of April on my lips.

We should go to Nature in the earliest spring, when the soft, open fields are yet asleep, when over all her splendor hangs a lovable mystery, and something amid the restful quiet seems hurrying, whispering and trembling with the slow march of growing things. A faint glow overhangs the trees, overspreads the fields, that was not there in November, which one has to look long to see. Indeed to see it and realize its infinite mystery there must be spring in your heart, just as there is in the heart of Nature.

This sleeping tenderness that clings along the streams, that creeps with a quiet joy into the distance, that shines steadfastly over the earth is the same we knew, back in the misty years; it accounts for the pure and loving recollections of childhood, of what was; of the murmur in our imagination of hidden brooks and half forgotten rivers, of the weird charms the woods held for us, and we find ourselves reading again a book we thought was closed.

Spring is a sorcerer; after the weeks of unseen preparation, the flowers are suddenly upon us, green has taken the place of brown, and the bloom of the morning sky lights up a landscape of color. Ah, yes, the whole country-side is aquiver, the deep brown of the distant slopes is toned with olive, the rains have washed the slim trunks of the gray birches until they twinkle in the distance, and are clean and white as we near them. As they lift their heads above the waste of sand and moss, a group of these birches makes me linger longer and marvel at their grace. The sky is so blue through them, the earth beneath them is so rich with tints in the sunlight, the song-sparrow singing on their highest tip so nearly perfection, that my pulses beat with their music.

If you set your foot abroad now, through woodsy ways, or anywhere under the searching air, you will find nothing that does not seem glad. If you are a good listener you will hear many songs that are full of this gladness; the tinkling of the silver brook, the rustling of the leaves that still cling to the oaks, the wind sighing among the pines, the choir of birds, and by no means least, the little noises hardly to be heard, but which are a very real part of the great sweetness that thrills us.

Along the green spring ways, where even the winds seem new, there is something that floods over us like a river; no man knows what it is, but we are powerless to prevent it. We have, instinctively, almost a glimpse, far back in our heart, of the flawless landscape for which this is only a preparation.

When I stand thus close to Nature, God somehow makes a feeling grow in my heart, that He is offering me a partnership with Him; here where the full freshness of the wind sweetens the air; here, where I stand on level ground and look off to the hills, bathed in blue and purple, reaching into a sky full of soft-winged, wandering clouds; here where

THE BIRCH ROAD IN SPRING F. B. HODGES

the sunlit path is of primrose as it winds along the sweet ways of the whispering birches.

We really know little about Nature, no man has gone far in knowledge of her wonderful ways, the songs of the birds are secrets, the birth and life of the flowers also, but we know that there is a purpose in all the expressions of Nature that never fails. The poor are rich as they hear her message, and the rich are poor without it.

"Children of wealth or want, to each is given,
One spot of green, and all the blue of Heaven."

However little it is that we are permitted to know, it is more, perhaps, than we have realized. In the days now at hand, as you go into the open, take heed of the things about you; it is not enough to admire the landscape's effects, but you should carefully observe the endless detail.

But above all else, be dominated by the poetry in your nature; remember what Emerson said about unpoetic scientists, —

"They love not the flower they pluck, and know it not,
And all their botany is Latin names."

It is your imaginative, your inherent poetic sense, that makes you appreciate in what measure you do, the charms of Nature; no physical contact can cause you to be thrilled, as you are by the lingering song in the hemlocks, or give you the feeling of tenderness you have as you come upon the leafless, slender gray birches; and what can bring to you that incense that curls along the brown earth, and rises deliciously to your nostrils, except a spirit of love, a soul in sympathy with God's art?

The best of this season, when Nature finds her sweetest expression, is before us. Let us go to her with an attitude of devotion, an open mind, and a resolution to become more familiar with her varying moods. There is more to be seen in the flowers than their beautiful colors and forms, there is something to dream over again and again. Just to follow the little paths past the little pools, to see the little pines swaying in the wind, the little lights through the trees in the hollow, this is not all, delightful as it is. All this must bring, will bring, a higher faith, a feeling as you come from these deep ways, that you have walked with God. Emerson said, "This beauty of Nature which is seen and felt as beauty, is the least part. The presence of a higher, namely a spiritual element, is essential to its perfection." Do you realize this perfect truth? Does your Nature-love mean to you what it should?

When I have learned to love Nature, to study her rightly, and in some degree appreciate the privilege; the best part of it is, not that I have learned to make better pictures; it is that I have bettered my inmost self, I have made my ideals higher, I have enriched my mind.

It is a difficult matter to really better one's inmost self,.but the same teacher is available for all of us, and no matter how large the class, each one is treated and taught by himself. One of the best things about the study of Nature is that it can never be made exhaustive. You never see the same picture twice, because of never ending changes in Nature and yourself. No man has ever written about Nature and laid bare his soul, and no man has ever made a picture that showed others just what he saw.

But I believe that the man who takes his camera and goes out into those beautiful fields, climbs those fascinating hills, wanders by the side of those love-inspiring brooks and responds to all the appeals that these things in Nature will make to him, has an opportunity to find the real worth of Nature-study. The camerist can build up a structure of knowledge through reading, technical study and practical work that will be, in general, the basis of all his work; but in countless ways he must depend on Nature's beneficence to prevent his pictures from being mere skeletons. When he makes a discovery through his love and study of Nature, it will surpass all discoveries he makes in other ways, and he will find also a discovery about character.

There is always this wonderful attribute found in Nature-love, that while we are drinking in her alluring charms through the inspiring and absorbing days that we spend along her brooks, her rivers, roaming across rolling fields and waving meadows and communing with her forests, we are not only improving our picture work, gaining health and happiness, but we are adding something to that inner wealth that we should prize most of all.

The beautiful in Nature is steadfastly beautiful.
The wonderful in Nature is irresistibly wonderful.
The fascinating in Nature is thrillingly fascinating.
The mysterious in Nature is profoundly mysterious.
The picturesque in Nature is ideally picturesque.
If anything is dependable, it is Nature.

LOOKING BACKWARD
C. A. EATON
Fifth Prize, Second Annual Competition

If anything is heart-satisfying, it is Nature.

Every day is as new as if it were the first.

There is no other pursuit that affords its benefits, that you can follow every day, that will flow with your life-stream and mix with it with the same purifying results as Nature-study. Likewise a fuller realization of showing to others in your pictures the poetry that dwells in your own heart will come with your Nature-study and you can apply to your own life with infinite satisfaction the words of Wordsworth,

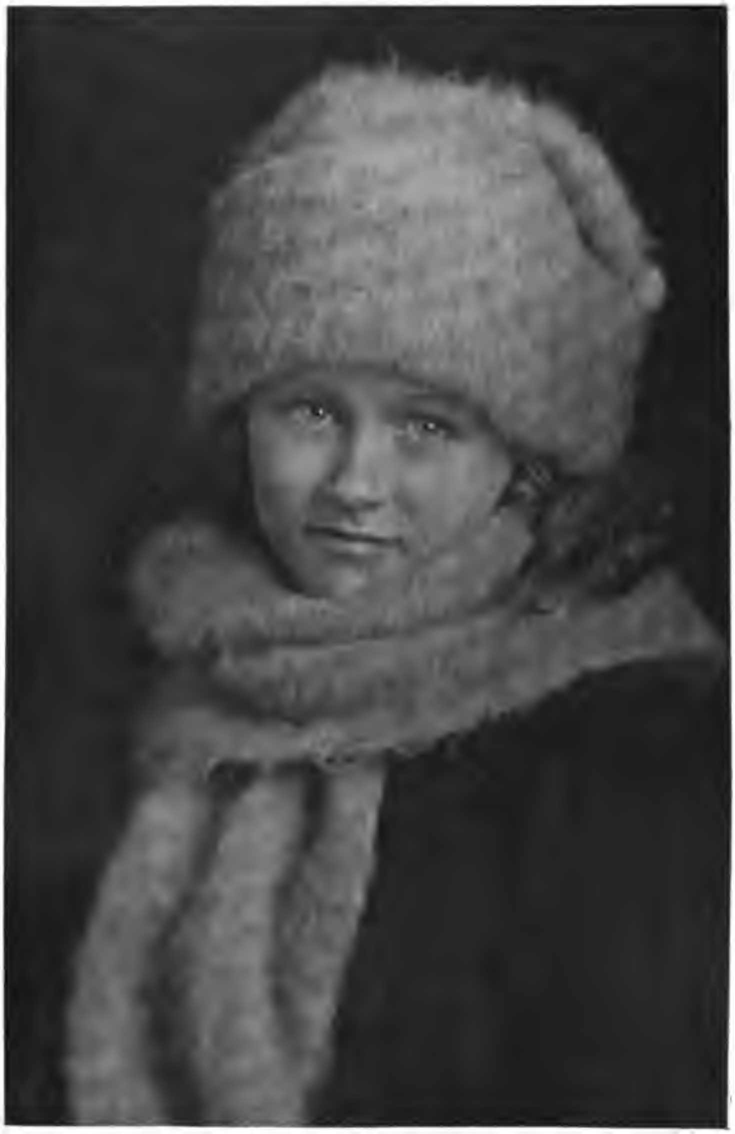
"Enough, if something from our hand have power,
To live and act and serve the future hour."

RAPIDLY MOVING SUBJECTS

CHARLES I. REID

THE attempt to secure a rapidly moving object, or a slowly moving one passing at right angles to our line of vision, in a photograph, both clearly and accurately defined, usually leads to the employment of a high shutter-speed, or if a high speed is not possible, to the abandonment of the subject. Obviously the reason for the lack of sharp definition resulting when a rapidly moving object is photographed with a slow shutter-speed is that the image on the sensitive surface is permitted to move in the interval during which the shutter is open. Hitherto, most of us, in attempting to photograph rapidly moving objects have thought only of decreasing this interval so that the image will have very little time in which to move. Of course it will always move to some extent even with the highest possible shutter speed, since movement is continuous and cannot be divided into exact sections — so to speak; but if the shutter is speeded up to a sufficiently high speed the amount of movement may be reduced to the point that makes it negligible in the resulting print. I propose, however, to direct attention to another method of reducing the movement of the image on the sensitive surface. Fortunately too, my system is not complicated nor involved, and not sufficiently original to be difficult to understand.

If, when following a moving object in the view finder or on the focusing screen we endeavor to keep the image in the center of the field, swinging the camera along with the object and using the lens as an approximate pivotal point, we shall see the moving object remain quite stationary, while the background, foreground and everything not moving with the object, at the same speed, are blurred. If, at the vital moment, we make the exposure while thus following the moving object with the camera, and do not as ordinarily stop and hold the camera still for the exposure, our object will be sharply defined with a very low shutter speed, while the background and everything else will be blurred. This is exactly the impression gotten by the eye when following a moving object which is then clearly defined, with the exception of integral moving parts, such as the spokes of a wheel, which move in both directions; while all surrounding objects are noted only dimly. This is a principle used in the design of the Cirkut panoramic camera, except that here the lens and film move in unison, while photographing a stationary object. The same idea is used constantly by motion picture photographers, who are naturally called upon continually to photograph all manner of moving subjects. To them the background is always of minor importance and an elaborate setting that has cost a fortune to construct



A FEBRUARY PORTRAIT

HARRY EDWARD HORRIGAN

First Prize, February Senior Competition

WINTER EVENING A. M. ODELL

First Prize, February Junior Competition

is often ruthlessly sacrificed to definition in the principal moving object, and it cannot be denied that these men often achieve wonderfully artistic results.

Some practice is required to acquire proficiency in following an object and making the exposure, unconsciously, at the right moment, without hesitating in the steady following movement of the camera; but such skill is well worth the effort necessary to acquire it. The principle is the same as that employed by shooters in aiming at a moving target. The gun is kept moving with the target while the trigger is being pulled Employing this idea, we can make slow exposures, in fact the speed of exposure is quite immaterial as long as it is fast enough to stop any movement caused by nervousness on the part of the photographer, and usually 1-25 second, if a higher speed is not available or not possible on account of lighting conditions, will do this very well. If we desire to stop the motion of integral parts, and a horse's hoofs might for our purpose be classed as such, we can disregard the forward movement of the horse as taken care of by the following movement of the camera and the fact that when the hoofs are resting on the ground they are moving backward in relation to the rest of the image on our plate or film, and we then have only to give an exposure sufficiently short to stop motion in the up and

THE WHITE HOUSE AMONG THE TREES

Eleanor L. Smith

Third Prize, February Senior Competition

down movement of the hoofs. There is, however, a large class of subjects in which this matter of moving parts need not be considered, as in the soaring aeroplane or birds, railway trains, trolley cars and man or animals walking or running, where the legs are not included for the sake of concentration on the more important head, and a multitude of similar subjects. Stereoscopic quality is obtained to a remarkable extent by thus concentrating on the principal object and ruthlessly blurring all objects not related to it or not moving in sympathy with it. The effect thus arrived at is immensely superior to the ordinary one gotten by reducing the exposure to the infinitesimal fraction that renders surrounding objects extremely sharp, with the principal object of our interest somewhat less sharp. The diffusion of the background obtained through this movement of the camera is also of a much more pleasing quality than the series of diffused circles of li given by a lens used at a large aperture in order to make possible the high shutter used otherwise. I would not urge the employment of any camera other than t one can obtain, but users of cameras equipped with ordinary lenses and slow will find the field of possibilities with their instruments extended to include a variety of moving objects. Personally, I follow this principle even in photographing very slowly moving objects; always keeping the thing of chief interest stationary in the view finder while making the exposure, thus subtracting definition from less important objects and concentrating it on the vital thing.

THE DEVELOPER THAT FAILED

JULIEN J. PROSKAUER

LITERATURE has its "The Light that Failed" and now photography has its "Developer that Failed."

About a year ago, you may recall, the Associated Press and other newspaper associations carried a story about a developer with which marvelous things could be done, a developer which so brought out the latent image that even flashlights were superfluous in some instances. This developer's purpose was so to reduce the silver bromide of the plate or film emulsion that underexposure would be a thing of the past.

Of course, it is a physical impossibility to put something on a plate when the silver bromide is not affected. But the theory of this developer was that known developers did not sufficiently reduce the exposed bromide to metallic silver. It is a known fact that sometimes the unexposed silver is also reduced and the exposure lost, but experiments prove that some slow-working developers with a great affinity for oxygen, even if used at once, oxidize and an underdeveloped plate results. Therefore those working out the new developer figured that a "perfect" developer was still to be found.

Developing agents can not develop all by themselves, an alkali is needed. Some standard developers of a high reduction value need less alkali than others, while hydrochinon, used in a single solution, is so constituted that the alkali governs its reducing power to a large extent. In working up the formula that was to "revolutionize photography," the thought was in mind constantly that too much alkali produces chemical fog, as well as softens the gelatine to an almost unusable degree. Also, something had to be found which would help to make the resultant negative black-blue. The accepted chemical was yellow prussiate of potash or potassium ferrocyanide.

Before we go any further, it is best to state what the new developer was to be used for, if a success. Press photographers work in bad light so often that they lose negative after negative where flashlights are impossible, and the movie news weekly operators as well as professional home portrait photographers also usually need some reducing agent which will bring out underexposed shadows to such a degree that a clear-cut print can be made. The developer, which was given the trade name of "Les-Lite," was for this purpose. Many gallons were used, until finally the formula was discarded.

For amateurs and press workers the formula is given below. It is suggested that it be tried on difficult exposures, to see its power. One reason for discarding it as a commercial proposition was that it so blackens normally timed negatives that they are worthless.

With this formula, I have made pictures of a sub-title of a Pathe News Weekly in one-tenth of one second in a darkened movie theatre. I have made action pictures of a prize fight in a darkened auditorium, the only illumination being four 1000-watt lights,

VIOLA WALTER L. OWEN

Second Prize, February Senior Competition

directly overhead, in one twenty-fifth second. Both of these exposures were made with a Speed Graphic Camera with a Kodak Anastigmat lens working at f 4.5

The formula is made in three solution form. This is it:

A

Distilled water	72 oz.
Sodium sulphite (E. K. tested)	6 oz.
Hydrochinon (E. K. tested)	1 oz.
Potassium ferrocyanide	10 oz.

B

Distilled water	32 oz.
Sodium sulphite	3 oz.
Potassium ferrocyanide	8 oz.

C

Distilled water	32 oz.
Sodium hydroxide	6 oz.

To use, take four parts A, two parts B and one part C. Development is complete in about 50 seconds.

Now, let's go over the component parts of this developer and see wherein its power lies. The reducing agent is of course the hydrochinon. The apparent excess of sodium sulphite is to keep the negative from staining and the potassium ferrocyanide is to blacken the negative as it develops. In solution A, you note we have no alkali. In solution B, we have no active agent but have the color-controlling agents, which, if kept in stock solution A, would rapidly deteriorate. The alkali we find in solution C. It is the strongest caustic which is safe to use on the delicate emulsion. It seems that this formula as written here would cause softening or frilling, but this is not the case.

In use, the potassium ferrocyanide reacts with the sulphite and the developing time is rarely over one minute, experiments proving that about 50 seconds is correct. This developer in the form given here will be found ideal for plates undertimed about one half. Of course, results are fearfully harsh and contrasty, but where a pyro-metol developer will build but little in the shadows, this developer will bring out everything possible.

It is suggested that the advanced worker try out this formula, using the amounts given here as a basis. Cutting down the caustic soda and sulphite will slow the development time and lessen the blueness of the negative. The formula given here may be used diluted with 9 parts of water for normally timed negatives, with a negative of good color for printing as a result.

For suggested "stunts" here are some exposures, figured with *f*:4.5 lens and Seed's Gild Edge 30 plates.

Girl reading at table — only illumination floor lamp with two 60-watt bulbs at side — 8 seconds.

Figure of man lighting cigar. Match used as "source" of light. Real light coming from 75-watt Mazda. 4 seconds exposure with light 3 feet away.

Dancer at theater. Footlights and spot lights. 1-10th of a second.

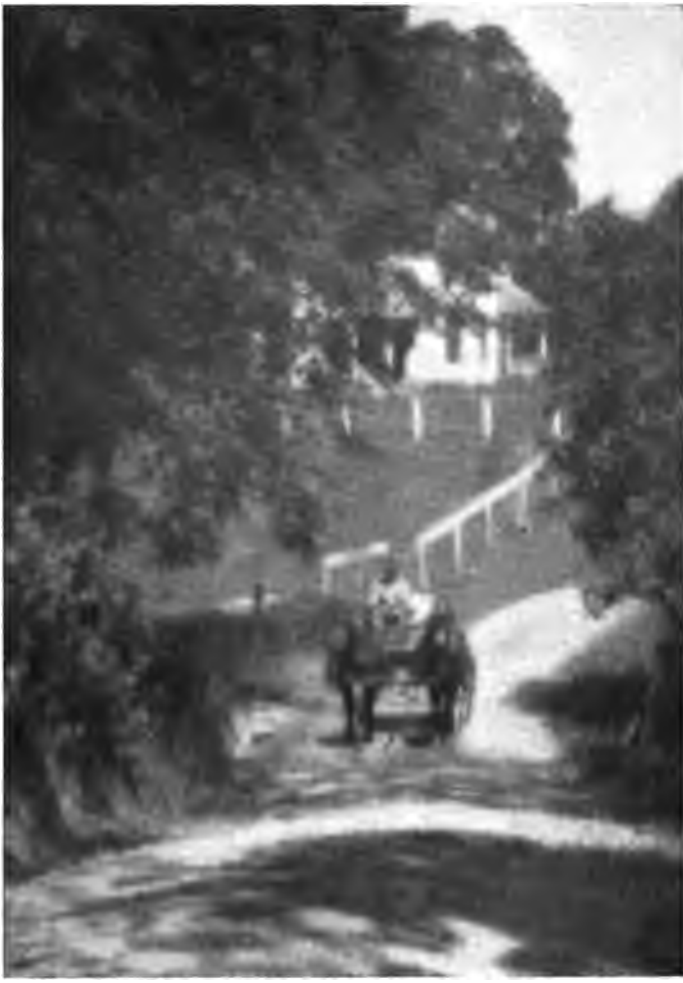
The user of this developer or a modified form is cautioned not to let his hands stay wet too long. The excess of caustic is dangerous. A lot of fun can be had working out "stunts," and I am confident even if Les-Lite is a commercial failure it will be a success for those experimentally inclined.

JUDGING A SALON

C. M. HARRIS

TO THOSE who, like myself, are novices in pictorial work, a peep behind the scenes at a salon should be both interesting and instructive, and may help the aspirants to salon honors to know what to strive for. It was my privilege to be present at the judging of the pictures submitted for the annual Salon of the Photographic Section of the Oakland (California) Art Association, and I profited greatly by the experience. With the exception of an interval for lunch, the judges were hard at work from nine in the morning until seven in the evening, on the seven hundred prints submitted.

It had previously been agreed that a very high standard of pictorial merit should be



THE WHITE FARMHOUSE WALTER P. BRUNING

Second Prize, February Junior Competition

established. Taking them as a whole, the pictures submitted were of a high order, and the task of the judges was a difficult one indeed.

The jury was made up of five members: —

Mr. William H. Clapp, Director of the Municipal Art Gallery, Oakland

Mr. John Paul Edwards, Pictorial Photographer, Sacramento

Mr. J. Nilsen Laurvik, Director of the Palace of Fine Arts, San Francisco

Mr. Edward Weston, Pictorial Photographer, Glendale

Mr. Roi Partridge, Etcher, Instructor of Arts, Mills College, Oakland; surely as representative and authoritative a selection as could well have been made.

The system of judging was a new one, and was devised by Mr. Clapp. Mr. Clapp's idea was to avoid as far as possible the domination of the jury by some one member with a forceful personality, thus preventing a heavy preponderance of one set of ideas.

The entries were numbered and placed on view in sets, according to maker, and the judges, armed with pencil and ballot, examined them, noting on their ballots, in one column the numbers of the pictures they wished to accept, and in another, those they wished to reconsider. Four full votes were necessary to a choice on the first ballot.

The result of this first ballot was startling in its revelation of the diversity of opinion, in matters of art, even among experts, and shows convincingly that every taste was represented. Of the total exhibit of over seven hundred prints, only six met with unanimous approval, and but fifteen others received the four votes necessary to a choice.

Those prints which did not obtain at least one vote were then discarded, and the balance, numbering several hundred, put up, still in sets, for reconsideration.

At this stage the judges debated the advisability of making further selections by open discussion of the merits and demerits of the individual pictures instead of continuing on the secret ballot system. The proponents of the former method suggested that some of the judges might have seen points in pictures which had escaped their colleagues. They finally carried their point, and the balance of the exhibition was selected by this method, three votes being now necessary for a choice. I am bound to say that each man stood conscientiously behind his ideas of what was artistic and worthy, and a great number of selections were made by the minimum of three votes.

The criticisms thus openly made were very illuminating and instructive as showing just what points appeal to pictorial experts. The first consideration was composition, balance and sheer artistic merit. An attractive pattern, no matter how ordinary, extraordinary, or even grotesque the subject, was a most desirable feature. Strength and carrying power were strongly considered. Originality was a valuable asset. Technical excellence had, by itself, little or no influence on the judges, but was very useful when other commendable qualities were present.

A large number of prints showing excellent craftsmanship were rejected on account of flaws in composition and lack of originality. This was especially true of the portraits. Most of those sent in looked as though they might be excellent likenesses, and they certainly ranked high, judged purely as portraits. It was only when viewed by those having no personal interest in the sitters, and regarded from the pictorial viewpoint, that they were found lacking. In order to pass the severe test they ware submitted to, they had to displaying striking individuality of treatment, able characterization combined with an interesting subject, or sheer pictorial merit.

No special recognition was accorded to the more elaborate printing processes. They had to take their chances on an even footing with the bromide and gaslight prints.

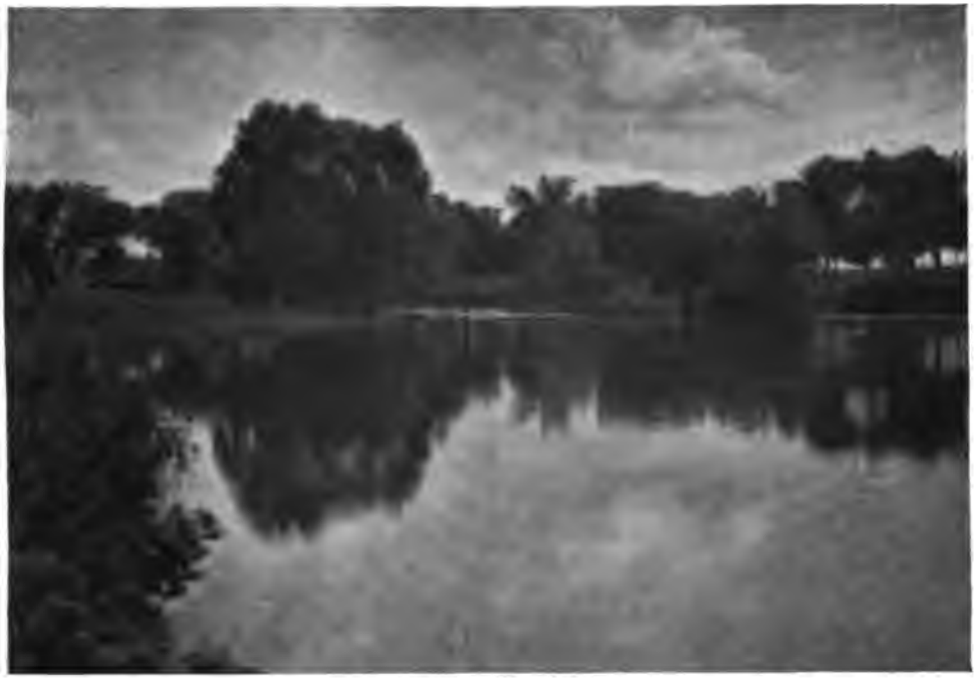
During the judging, each man's work appeared before the injury as a unit, and consistency of performance, when it showed a real understanding of art, had its weight in persuading the judges that certain workers were entitled to be represented.

In the case of novelties of a bizarre character, the question arose as to whether they resulted from chance snapshots, or from endeavor guided by artistic understanding, and the pictures were accepted or rejected in accordance with the conclusion arrived at on this point.

One or two pictures were spoiled by too elaborate mountings, which competed in interest with the prints they were intended to show off.

I hope that the above observations, with the light they shed upon the qualities necessary to enable a picture to battle its way into a salon, will serve to point out to brother novices in pictorial work the path they must tread to attain their ambition.

In conclusion, Oakland has a really great exhibition, and since the judging has been so severe, it is indeed an honor to be represented there, even, as in my case, by a single print.



EVENING STEPHEN MARSH

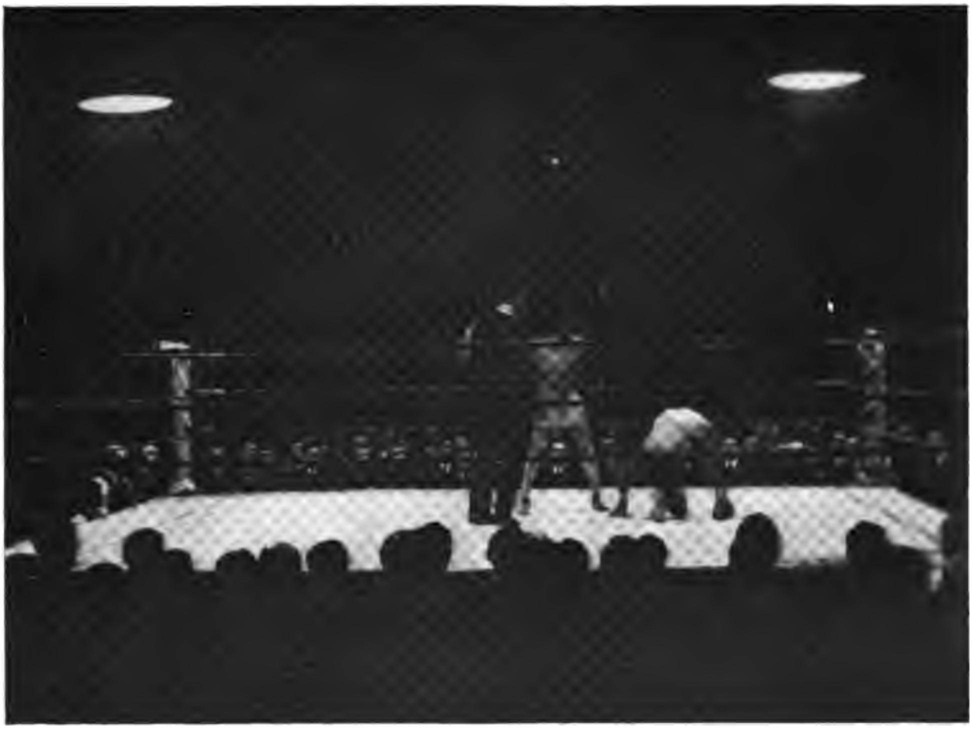
to swab the prints over with a pad of cotton wool as they are removed from the final wash water. With sketch and vignette portraits it is often desirable to use the above-mentioned reducer in case the background has printed through, at the same time taking the opportunity to correct any errors in vignetting. A wash all over the print will often improve flat looking prints, if they have been fully printed. — *B. J.*

EVENING

One of the difficulties encountered when making pictures in the late afternoon is the very poor actinic quality of the light which is often very deceiving in its brightness. A reference to almost any reliable exposure table will show that the exposure factor increases very rapidly as the hour becomes later. In our own exposure table the factor for exposure at 3 P. M. in July is ½ and at 6 P. M. it is 3. After four or five o'clock in July the actinic value of the light decreases very rapidly, although the light still appears to be quite bright. The use of a ray-filter often is unnecessary when making pictures towards evening, as the light itself often is yellow and thus serves as a very satisfactory filter. In Mr. Marsh's picture, entitled "Evening," there are evidences of slight underexposure of the negatives due, no doubt, to the low actinic value of the light. The distant planes are rendered in too dark a tone and do not appear to be properly separated from the nearer planes. The ratio of exposure with a ray-filter is not always the same for different plates or films; a given filter may be a 2x with one make of ortho plate and a 4x or even a 6x with another. This should always be tested and the correct factor for certain plates or film found by actual trial. "Evening" was made in Massachusetts with an Icarette A, size 2¼ x 2¼, Icar lens of 3 inches' focal length, stop *f*:8, good light, late afternoon in July, exposure 1-50th second through a sky filter, N. C. film developed with pyro-soda, part of negative enlarged on P. M. C. No. 6.

FOCAL PLANE EFFICIENCY

A focal plane shutter is very efficient if the blind is in close proximity to the sensitive film, otherwise its advantage is neutralized. A wide slit and a high tension are preferable to a narrow slit and low tension, even if the actual shutter speed is the same by the table of shutter settings.



THE KNOCKOUT J. J. PROSKAUER

THE KNOCKOUT

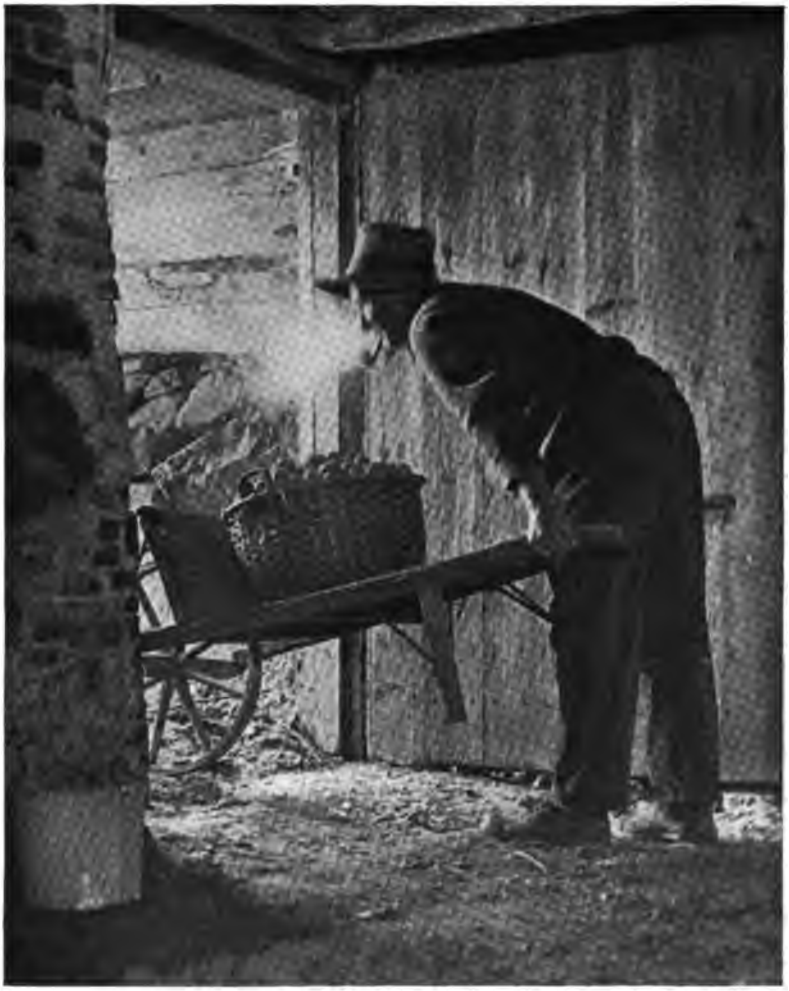
This is a wonderful example of modern methods in press photography and demonstrates in a very striking manner the great strides that have been made in the manufacture of equipment and materials for speed work. The picture is a snapshot made under the conditions shown in the reproduction. The light that was used consisted of the two lamps hung above the ring which appear in the upper corners of the picture, the lens was an *f*:4.5 Series II Wollensak used at full aperture, the exposure was 1-10th second and the plate was a Seed 60 Graflex which was develvoped in "Les-Lite" developer. The enlargement, 7 x 9, is on Azo Hard F. At first glance it might be considered that the negative was underexposed; possibly that is true, but the heavy shadows in all parts of the picture except the ring itself are due to the concentration of the light rather than to underexposure. Pictorially the picture is very interesting too; the silhouette of heads along the front edge of the ring, the natural attitudes of the pugilists and the interested spectators in the background all contribute very much to the success of the whole. It would be quite possible to obtain a more fully-exposed negative than this by the use of a more rapid lens, such as a "movie" lens working at *f*:2 and this would make it possible to obtain kinematograph pictures of a boxing match entirely by artificial light.

FIXING AND WASHING

There is no need to be in a hurry about taking negatives or prints out of the fixing bath. They are not injured by being left a good deal longer than necessary, provided the bath is fresh.

The fixing bath contracts the gelatin emulsion and expels the water from the pores, thus leaving the gelatin drier and harder than it was when fixing began. On the other hand, prolonged washing in water that is slightly warm softens and swells the emulsion and may cause frilling and other similar troubles.

In warm weather, negatives are better for prolonged fixing and comparatively short washing. If the fixing bath is fresh, negatives may safely be left in it for half-an-hour, even though fixation may apparently be com-



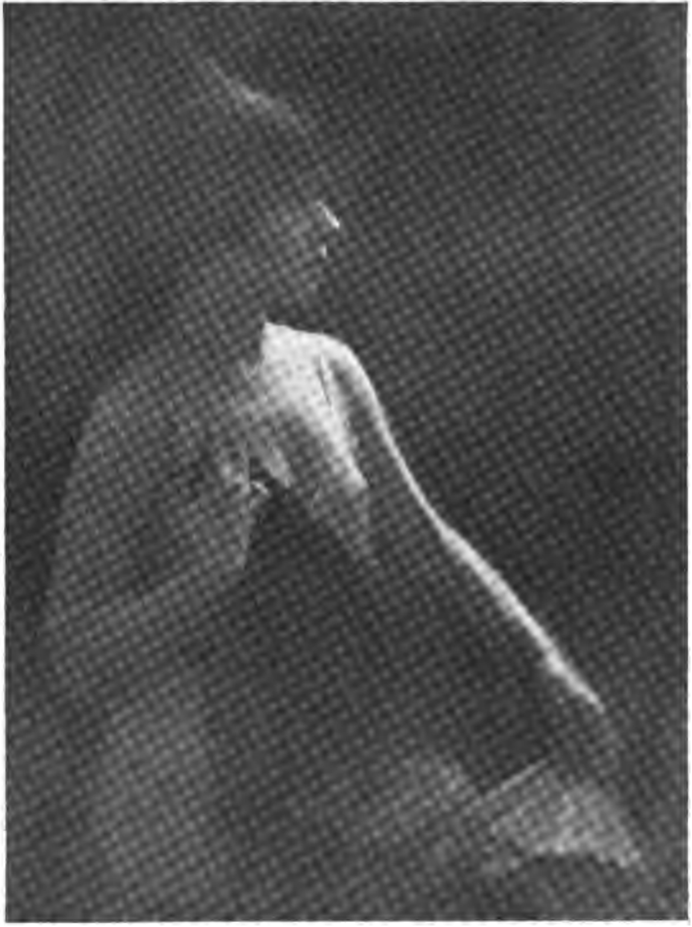
AT THE CELLAR PORTAL — GEO. W. FRENCH

plete in eight or ten minutes. If negatives are thoroughly fixed in this way, they will not need to be washed for more than twenty minutes in running water. This method of working not only gives more satisfactory results but is actually quicker than the usual method of fixing for ten or fifteen minutes and washing for an hour.

Prints, of course, must be given a longer washing than plates. — *Professional Photographer.*

AT THE CELLAR PORTAL

It takes considerable skill to pose a figure and select and arrange the accessories in making a genre picture, and a successful result thus obtained is, perhaps, more worthy of commendation than an equally pleasing arrangement that was obtained by seeing and seizing upon the opportunity when it occurred. Mr. French's genres, made with a combination of daylight and flashlight, are always characterized by strength, simplicity and natural posing that appears to be entirely unpremeditated. The lighting is well balanced, one source, the sunlight or the artificial light, being subordinate to the other. In the present example, "At the Cellar Portal," these desirable characteristics are very much in evidence; the pose is natural and convincing, the accessories are few and appropriate, the picture is strong by reason of its simplicity and the double lighting is skilfully managed with the sunlight predominating. Technically this is quite up

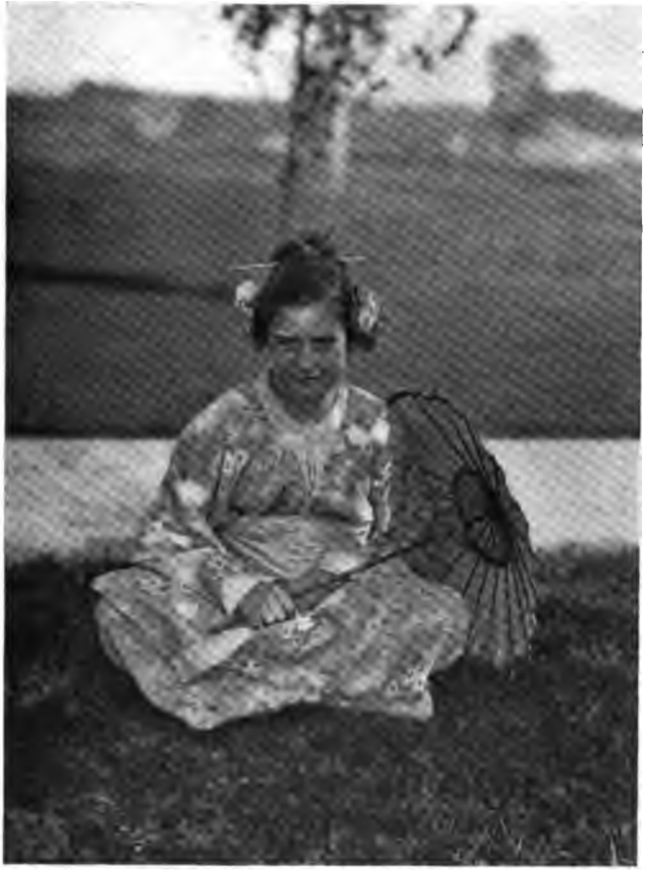


PORTRAIT OF A SPANISH GIRL WM. B. IMLACH

to Mr. French's usual standard, which is always very high. The slight motion of the head is apparent only on close examination; at a little distance it is not discernible. Made in Maine with a 3¼ x 4¼ Reflex camera, Velostigmat III lens of 6½ inches' focal length, used at *f*:4.5, exposure 2 seconds plus flash, strong light outside, very weak inside, Standard plate developed with pyro, enlargement on Artura Carbon Black.

PORTRAIT OF A SPANISH GIRL

Just as we have many different musical instruments, each different from another, so we have many different methods of pictorial representation, each of which has its own peculiarities, limitations and advantages. When we use oil or watercolor paint we avail ourselves of the great possibilities to be secured by the use of color, but we find that the mechanical difficulties of getting a pleasing and truthful representation of tone gradations are very great. If we use the etcher's needle, we get line and gradation, but no color, while if we use a camera we get, or should get, gradation and modeling that cannot be excelled or equalled by any other medium. This is the peculiar virtue of photography that distinguishes it from other forms of graphic art. There are times when the rather short scale of "gum" is appropriate and suitable — it all depends upon the intentions of the maker of the picture — but we do not think this is a case in point. The pose is graceful and the lines of the picture are pleasing and we should think the negative is one that is worth printing in a more suitable medium. Made with a Korona View Camera, 6½ x 8½, Wollensak special semi-



JAPANESE STUDY C. L. RICHARDSON

achromatic lens of 16 inches' focal length, stop used f:5.6, bright light at 4 P. M. in May, exposure 8 seconds, Standard Orthoon plate, multiple gum print.

JAPANESE STUDY

In making a "study," either by photography or by any other means, the characteristics of the subject must either be quite natural ones or else the makers of the picture, the artist and the subject, must be able to appreciate the importance of even the smallest detail in the suggestion of the character. This is very difficult and we do not think it would be putting it too strongly to assert that it is impossible for an American girl to pose for a Japanese "Study" with complete success. Even if she had spent considerable time in Japan and had become familiar with the manners and customs of the country, the difference in facial characteristics would be hard to change even by skilful make-up. Mr. Richardson's "Japanese Study" is very interesting in many ways, but it is not at all convincing and the subject is very obviously not Japanese. Probably, however, it was never intended to be a serious "study." There is one mistake made in the placing of the figure, which Mr. Richardson most likely has noticed, just as we did, and that is in having the tree in the background so placed that it appears to be growing out of the girl's head. It would have been better, too, if the path could have been eliminated. In all other respects the picture is very successful, the lighting is good and the technical handling is very fine. Made in Iowa with a 4 x 5 Graflex camera, Bausch and Lomb lens of 7½ inches' focal length, used at f:5.6, exposure 1-25 sec., hazy light at 4 P. M. in August, Eastman Portrait film, developed with Elon, print on Iris, Grade C.

PHOTOGRAPHING POLISHED SURFACES

Reflections are sometimes a trouble to a photographer. One of the simplest ways of overcoming the reflections is to sprinkle the floor of the studio or room in which the objects are to be photographed sufficiently to render the air slightly moist. Then, when all is ready, drop a lump of ice into the vase or jug. This will chill it and immediately the moist air of the room will condense on it and dull the whole surface. The camera should be ready for the exposure (see that the lens is not clouded), for as the condensation continues it will begin to drip down the sides of the vessel. If more than one negative is required, remove the ice from the vessel till ready for the second exposure.

Another way for dealing with polished metal is to take a piece of putty — not too soft — and dab it evenly all over the bright surfaces. This will render them non-reflective and so remove the difficulty. The putty can be cleaned off and the gloss restored by means of a plate brush and whiting with a little benzole. Neither the dabbing with putty nor the using of ice can injure either glass or metal. Don't make the mistake of underexposure. Go for the shadows, and not simply for the highlights. These will be overexposed, and tentative development should bring out the shadow detail before full density is obtained.

One of the easiest objects to copy, so far as reflection is concerned, is a daguerreotype. The surface is so bright and so even that it reflects like a mirror — that is, it will reflect the light at the same angle that the light strikes it, and so, if only a sidelight is used to illuminate it, there will be no direct reflection into the lens of the camera.

Sometimes machinery has to be photographed. In the case of new machinery it may be painted or varnished, according to the whim or custom of the maker. There is a period in the finishing of a machine when the parts to be painted receive a priming coat. If the photographer can take the negative at this stage, his work is rendered easier. The great trouble with machinery is often its position. A machine is a solid object and stands where it is built — that is, a photographer cannot move it at will. If the machine has to be dulled to kill reflections, paint it over with flatting color. This can be cleaned off with a handful of cotton waste dipped in turpentine or benzine.

In photographing silver plate we may find an inscription. Take the plate to a copper-plate printer and ask him to ink the inscription. The letters, being now in black ink, will photograph much clearer, and a little turpentine in a rag will clean the ink out.

The photographing of gold letters cut into mottled and highly polished marble — on memorials — is often difficult; in fact, if the letters are small, it is often almost impossible to read them on the stone itself, especially if the gold has partly flaked off. The best way out of the difficulty is to mix some whiting to a stiff paste with a little water and fill in the letters with it until they are flush with the face of the stone. The white matt letters will now be distinguishable in the photograph. The filling can easily be removed from the letters by either washing or brushing it out. — *Photographic Journal of America.*

TEA-TIME IN TOYLAND

This very interesting little picture proves that with suitable equipment it is possible to make snapshots indoors. Not that this is anything new; it has been possible for a long time, but it is a good thing to remind photographers of this from time to time because there are so many who think that exposures indoors must necessarily be long time-exposures. To take a picture indoors in 1-10th of a second calls for a very rapid lens, the fastest plate that can be obtained, good light and careful development and printing, all of which are quite within the reach of most amateurs. In making his very successful picture, "Tea-Time in Toyland," Mr. Harris used a Cooke Aviar lens at *f*:4.5, a Seed Graflex plate developed with pyro and enlarged on P. M. C. No. 8. The light was not by any means the best possible, the picture being taken in February at 2 P. M. and yet the picture had quite sufficient exposure. The figure gives the impression of being rather cramped and crowded in the picture space. It would be better, if it is possible, to leave more room at the top and bottom, especially at the bottom. By cutting down the exposure to a fraction of a second it is possible to obtain results that are — like this one — charmingly natural and unconstrained in pose and expression.

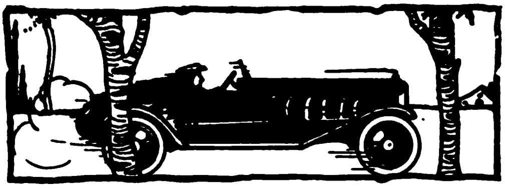
TEA-TIME IN TOYLAND — C. M. HARRIS

RESTORING FADED PRINTS

Bromide and gaslight papers have lessened very much the risk of prints fading. If insufficiently fixed, they may develop yellow patches, but the gradual disappearance of the picture, by no means unknown when the image was a printed-out and not a developed one, is now far less common. For such stained prints, so far as we know, there is no remedy; but for the silver print which has faded, it is often possible to supply some of the missing image by a process of intensification. The first proceeding would be to wash the print thoroughly to remove any soluble impurities, and then to place it in a solution of mercuric chloride, strength of no great importance, until bleaching has gone as far as it will. Washing with six changes of a 1% solution of hydrochloric acid, followed by an equal washing with plain water, leaves it ready for darkening, which is best done with a ferrous oxalate developer. This may be made by pouring one part of a saturated solution of ferrous sulphate into five parts of a saturated solution of potassium oxalate. A final washing in a couple of changes of citric acid solution (four grains to the ounce), followed by half a dozen changes of plain water, completes the operation. The fading of negatives very rarely happens; but the same process would be applicable. Before applying such a treatment to an irreplaceable negative or print, the precaution should be taken to make the best possible photographic copy, in case the result is to spoil the faded photograph. It must not be forgotten that the fading itself is due to some irregular condition of the image, of the precise nature of which one is ignorant; so the result of exposing it to these operations may be unexpected and destructive, however carefully they may be carried out. — *The Amateur Photographer.*

OUTDOOR PORTRAITS

In making an outdoor portrait, the figure should not be too small, or it will lose its significance. A careful balance must be maintained between figure and background. As a rule, distant objects are distracting and should not be included unless they are pictorially a part of the composition.



THE PHOTOGRAPHIC REVIEW

E. J. Wall, F. C. S., F. R. P. S.

Increase of Sensitiveness by Dyes.—Lüppo-Cramer points out that the addition of dyes, as is well known, results in the increase of the speed of an emulsion for various spectral regions, but that an increase of the total sensitiveness to white light has not been recorded. He considers that the increase observed with the use of silver eoside in collodion emulsion is due to the elimination of the bromides absorbed by the silver salts, which it is impossible to wash out. He has now found that grainless emulsions, as used for Lippmann interferential heliochromy, can be considerably increased in speed by the addition of dyes. Pinachrom and pinachrom violet give an increase of about 16 times, when used in 1:10,000 solution; and erythrosin, pinacyanol, rhodamin B, and diiodofluorescein give about 10 times in the same concentration. Pinaflavol, the new green sensitizer, also appears to have like action, as when used in 1:2000 solution, the increase was found to be about 8 times for blue and naturally very much higher for yellow and green, for which the raw emulsion is not sensitive at all.

With gelatino-chloride emulsions, developed with glycin without alkali, the increase was from 16 to 40 times; process plates bathed in 1:10,000 solution gave increases from 6 to 15. Fast plates will not stand such strong sensitizing baths, as they possess more initial fog. Lüppo-Cramer is inclined to ascribe some of the action to the iodide in the dye molecule, which amounts to about 34% (*Der Phot.*, 1921, **31**, 169, 242; *Sci. Tech. Ind. Phot.*, 1921, **2**, 82).

The fact that yellow dyes increase the sensitiveness to white light, which is tantamount to increase in sensitiveness for blue, has been known for some years, and canary II has been used with collodion emulsion for the last 15 years.

Physical Development. — Lüppo-Cramer states that as good results can be obtained by this method as by development in the usual way. After exposure the plate is immersed for 1½ minutes in a 5 per cent solution of crystallized sodium sulphite, containing 1 per cent of potassium iodide, briefly washed and then physically developed with the following:

Metol	20 g	140 gr
Citric acid	40 g	270 gr
Water	960 ccm	15¾ oz
Gum arabic, 20% sol.	40 ccm	⅔ oz

To every 100 parts of the above should be added just before use 4 parts of a 10 per cent solution of silver nitrate (*Phot. Ind.*, 1921, 797.)

Physical development was first suggested by Abney (*Emulsion Processes in Photography*, 1878, 11) and has been repeatedly brought forward since. The particular advantages are not obvious, but undoubtedly the process is a legacy from the old collodion days. The particular improvement of the above solution is that it is said to give as good results as by the ordinary developer, which hitherto has not been obtainable. The quantity of acid is reduced from that usually advised, the silver increased, and the use of a colloid, the gum arabic, advised.

A Stable Solution of Iodine. — J. L. Mayer has tested the so-called Churchill's tincture of iodine, composed of iodine 16.5 g, potassium iodide 3.3 g, alcohol, 70%, 100 ccm, and finds that in 6½ years there was practically no change (*J. Am. Pharm. Assoc.*, 1921, **10**, 525; *Chem. Abs.*, 1921, **15**, 3367).

Desensitizing Again. — O. Mente has pointed out that some orthochromatic plates are not desensitized by the pheno-safranin process. Lüppo-Cramer looked into the matter and found that this is due to the presence of erythrosin, which is used as the sensitizer, as this forms a complex with the safranin so that the latter cannot exert its action. The same was found to happen with plates containing a yellow dye in the emulsion, the "self-screened" or "non-filter" plates. Bathing the plates in a 5 per cent solution of potassium carbonate was found to be the remedy, but even this can be obviated by making the safranin bath alkaline (*Phot. Ind.*, 1921, 912).

There is here, of course, the familiar precipitation of the basic safranin by the acid dye used for screening, and this probably takes place on the surface of the film, preventing the penetration of the safranin into the emulsion.

Lüppo-Cramer has also tested aurantia, which was recommended by Lumière and Seyewetz (this Journal, 1921, 656) and finds that it also cannot replace the safranins, except for such slow emulsions as the autocrome plate. The Hoechst Farbwerke have introduced safranin JIV, a violet variety, called pinasafrol, which does not stain the gelatine so badly and which washes out more easily. This dye is tetra-methyl safranin, and is one of the dyes tested by Lumière and Seyewetz (Phot. Korr. 1921, **58**, 257). Lüppo-Cramer used a solution of aurantia 20 times weaker than that recommended by the Lumières, which probably explains his contradictory statement.

Funger (*Phto. Chron.* 1921, 245) recently stated that safranin could be replaced by acid green or corallin for desensitizing, with the advantage that they did not stain the film or fingers. Lüppo-Cramer has tested these dyes and found that they are not desensitizers, and that plates developed under yellow light with them are badly fogged. (*Der Phot.*, 1921, **31**, 303; *Sci. Tech. Ind. Phot.*, 1921, **1**, 101.)

J. Desalme as a recent meeting of the Société française de Photographie made a preliminary announcement as to the desensitizing action of sodium picramate in 1% solution; his experiments were not complete and it was only tested on ordinary and isochromatic plates. (*Brit. J. Phot.*, 1921, **68**, 700.)

Picramic acid, $C_6H_2.OH. NH_2. NO_6. NO_2$ (1:2:4:6), is a deep red crystalline compound, known as dinitroamidophenol; it is insoluble in water but soluble in alchohol. To make the sodium salt it is only necessary to dissolve 40 g caustic soda in water and add the acid, 199 parts, the result being 222 parts of the sodium salt.

Scientific Cinematography. — Dr. Comandon, who is well known for his work in this department, recently exhibited various films showing the application of cinematography to scientific research, such as the conversion of white into red phosphorus under the action of light, and the action of ultra-violet light on microbes, which was first to arrest their movements and then to cause them to split up; this being probably an explanation of the purification of water by ultra-violet light. One of the most interesting films was that of a particular mushroom, a Myxomycete, which is a mass of protoplasm, about the size of a half-dollar, containing a large number of nuclei but no membranes. In this transparent jelly certain currents had been observed, and by taking negatives every five seconds and projecting the positives at the normal rate, it was seen that there was a rhythmical movement somewhat like the heart beats of higher beings. The karyokinesis or cell division of living cell tissue was shown, as also the pursuit of microbes in living blood by the white corpuscles. The cine-camera is operated automatically every 5 seconds for hours or days at a time if required (*Bull. Soc. franç. Phot.*, 1921, **63**, 91).

THE DOMINANT BLUE IN AUTOCHROMES. — M. Schlitz has adopted a method of exposing autochromes so as to correct the excess of blue too often met with. He gives 80% of the necessary exposure with the autochrome filter, then places in front of that a Wratten & Wainwright G filter for 14%, and then gives the remaining 6% behind a Wratten A. Naturally, if the cemented glass filters were used, they might disturb the focus, so the gelatine film filters are recommended. To determine the exposure an Imperial exposure meter is used. (*Bull. Soc. franç. Phot.*, 1921, **63**, 23.)

A NEW STUDIO LAMP. — A new power has been placed in the reach of professional photographers by the introduction by the Etablissements Sautter-Harle of an arc lamp, mounted on a stock like that of a Colt revolver, and weighing only half a pound, which can be held in the hand, so that the light can be directed in any desired direction. Apparently the crater faces a small reflector, which may be either polished or matt, the latter being used for general diffuse illumination, while the polished reflector acts like a concave mirror and directs a well-defined beam to any desired spot, so that some startling effects can be obtained. There is absolutely no mechanism about the lamp, the arc being struck by pushing the negative pole with the thumb; after burning for about 3 or 4 minutes, the carbon has to be again pushed in in the same way. It works on D. C., 110 to 120 volts with 8 amperes; the positive carbon is 9 mm in diameter and 150 mm long, and the negative 4 mm and 150 mm; the lamp is stated to give 5,000 c. p. (*Bull. Soc. franc. Phot.* 1921, **63**, 162).

STATIC. — There are probably few amateur workers who know what static is; on the other hand, to the cinematographic operator it is one of the bugbears of life. It is the tree-like markings caused by static electricity too frequently found on negative films, and has been the cause of very serious loss sometimes, as if it occurs very badly there is nothing to do but retake the scene. M. Schmidt, of the E. K. Co. has recently given a very good summary of the subject. It is more likely to occur in winter than in summer, in a dry atmosphere or in sharp changes of temperature in autumn and spring, or when the camera is carried from a hot studio into a cold outside. Static is practically caused by friction and therefore, elimination of this is a great assistance. Heat and cold have apparently not so much to do with its appearance as dryness, and it is customary to keep printing and perforating rooms in a certain hygrometric state equal to the temperature in Fahrenheit. It is more frequent on negative stock than positive, merely because the emulsion is more sensitive. Glass, ebonite, silk velvet and paper are more likely to cause it than hard metals, such as nickel, steel and bronze, and cotton velvet is preferable to the silk. Glass pressure plates in printers should be avoided, and if a brushing machine be used, the hairs should be connected to a metal core; vacuum cleaners are much to be preferred; brush static generally occurs in comparatively straight lines towards the center of the film. The winding spools or cores should not be too large so as to scrape against the sides of the magazines, particularly if the latter are made of wood. There is a commendable tendency at the present day to construct all-metal cameras. The fingers should be kept away from the films as much as possible in winding on to the developing frames. Mr. Lawrence, of Oakland, Calif., considers that an all-metal crank is sufficient to prevent static, as the operator's body will then earth it. A copper chain fastened to the camera screw and driven into the ground by means of a copper peg is also said to be a cure. A film was placed on the market which was coated on the back with gelatine or gum, but these are hygroscopic in damp weather and tend to powder off in dry. An Italian firm of producers purchases its stock of film in May and September and claims that keeping it for 7 or 8 months before use completely prevents static. Obviously this means locking up a small fortune and it is not an infallible remedy (*Bull. Soc. franç. Phot.*, 1921, **63**, 113).

A joyous little story, and a true one, is told of the mayor of a certain Florida city, who was a guest at the opening of a Screen Club, and was throwing himself heart and soul into his welcome and dilating on the resources, scenic and otherwise, of the place. A small voice at the back of the room piped up: "Have you any static?" The mayor replied: "There's plenty growing down the —— River, and if you can't find it we'll get it for you." This brought down the house and the mayor resumed his seat well pleased at the reception of his speech.

HOME-GROWN CAMPHOR. — In the *Revue des Produits Chimiques* M. A. Dubosc urges the French Government to develop camphor plantations in Tonkin, and quotes the recent expansion of camphor cultivation in the United States and the Philippine Islands. The initial steps were taken by American celluloid manufacturers, but last year several companies were formed to exploit camphor plantations, and the Department of Agriculture is keenly interested in the industry. The first camphor farm to be established, at Satsuma Heights in Florida, has placed 10,000 lb. of camphor on the market since the beginning of the year, which is said to be equal in all respect to Japanese refined camphor. Two companies operating in Florida are said to possess estates of about 2500 acres each, and a third has obtained concessions in Texas for establishing a large camphor forest. Camphor plantations do not become productive in less than 40 to 50 years. The Japanese Government is attempting to replace in Formosa the camphor forests that have been destroyed by over-exploitation, but by the time the Japanese schemes become productive the United States will be independent of Japanese supplies, if the present policy is maintained. *The Oil, Paint and Drug Reporter* of September 5 reports that in evidence given before the State Finance Committee on the Fordney Tariff Bill the chairman of the Monsanto Chemical Works said that if a 25 per cent. *ad valorem* tariff were placed on camphor imported into the United States the company would produce within a few months sufficient synthetic camphor to render importation unnecessary. In 1920 the company began to erect a synthetic camphor plant to use a German process, but owing to trade depression work was suspended after $425,000 had been spent upon it. A further $1,000,00 was needed to complete the plant, but, given protection during the development stage, the project would be carried through (*J. S. C. I.*, 1921, **40**, 388R).

PYRO DEVELOPERS FOR PAPERS. — T. Kingham suggests that very fine warm brown tones can be obtained on development papers (gaslight) by the use of the following developer:

A.	Sodium metabisulphite	5 g	35 gr
	Pyrogallol	22 g	154 gr
	Potassium bromide	15 g	105 gr
	Boiled water to	1000 ccm	16 oz
B.	Sodium sulphite, cryst.	175 g	1225 gr
	Sodium carbonate, cryst.	175 g	1225 gr
	Water to	10000 ccm	16 oz.

For use mix A 10, B 20, water 70 parts. The image appears in from 30 to 40 seconds and development is complete in 3 or 4 minutes; the prints should be fixed in an acid bath without intermediate washing. (*Amat. Phot.*, 1921, **52**, 271; *Sci. Tech. Ind. Phot.*, 1921, **1**, 101.)

The use of pyro for obtaining warmer tones with chloride and chlorobromide emulsions is very old, and the only danger is the staining of the paper by the oxidized pyro. Why the sodium metabisulphite should be recommended, instead of the more common potash salt, is not evident.

A NEW MERCURY REDUCER. — A. Steigmann recommends the use of mercuric nitrate as a reducer, as acting like the familiar hypo and ferricyanide solution, with the advantage that the solution keeps well. A 0.5 per cent solution acidulated with nitric acid is usually strong enough, and the reaction may be represented as follows:

$$Hg(NO_3)_2 + Ag = AgNO_3 + HgNO_3$$

The metallic silver is converted into the nitrate and the mercuric into the mercurous nitrate, and the addition of nitric acid converts this again into mercuric nitrate. If a very slow and slight reduction is required, mercuric sulphate in saturated solution should be used (*Phot. Ind.*, 1921, 697).

URANIUM TONING. — A. Cobenzl recommends the following for obtaining pure chestnut brown tones with clear whites:

Uranium nitrate or acetate, 10% sol.	50 parts
Potassium oxalate, 10% sol.	50 parts
Hydrochloric acid, c. p.	10 parts
Potassium ferricyanide, 10% sol.	20 parts
Water	1000 parts

Dissolve in the above order. Toning is rather slow (*Phot. Chron.*, 1921; *Phot. Ind.*, 1921, 766).

This is a mere variant of Sedlacek's bath (*Die Tonungsverfahren von Entwickelungspapieren*, 1906) and the quantity of hydrochlocic acid is far to great as it forms the chloride and causes whitish tones in the shadows, and the prints are very liable to change color on keeping.

ESTIMATING EXPOSURES IN ENLARGING. — F. C. Lambert revives his old plan for determining the exposures by finding the distance at which the image becomes invisible or visible when a candle is used. The plan is to focus the enlargement in the usual way and then place a foot rule against the image and move a lighted candle along the rule till the outline of some distinct part of the picture, the roof of a building against the sky for instance, is just seen to disappear, when the candle is brought nearer to the image, or when it appears if the candle is moved away from the image. The distance is read off on the rule and squared and this gives the relative exposure (*Am. Phot. & Phot.*, 1921, **52**, 161).

It is obvious that some preliminary trials are essential to obtain a starting point, otherwise it is no guide. And as candles vary considerably in their candle-power, one must stick to one particular make of candle, and even then the flame must always be burning at the same height.

CELLULOSE ESTER VARNISHES. — L. Clément and C. Rivière give a very good summary of the making of varnishes from the cellulose nitrates and acetates, and the following are of photographic interest. In making these varnishes it is not advisable to filter them, as there is usually considerable loss of solvents, and filtration is difficult to effect without special apparatus, such as a suction tube. The most satisfactory plan to clear them is to store them in a tall cylindrical vessel of narrow diameter, for from six to eight months, and allow the insoluble particles to subside. Commercially, centrifugal separation is generally used. Colored varnishes may be prepared either by the use of aniline dyes, which obviously must be soluble in alcohol, or by the suspension of insoluble coloring matters, though this is not so satisfactory. To protect metals from oxidation and other atmospheric action, a 5 per cent solution of pyroxylin in equal parts of amyl acetate and alcohol is useful. Sometimes butyl acetate is used instead of the amyl compound. This gives a film which is quite invisible when dry and which, if applied with a soft fine brush or spray, can be used on engraved or relief metal work. It adheres well, but the adhesion is increased by the addition of certain gum-resins, for instance:

Pyroxylin	37.5 g	262 gr.
Shellac	37.5 g	262 gr.
Amyl acetate	500 ccm	8 oz.
Benzol	250 ccm	4 oz.
Methyl alcohol	250 ccm	4 oz.

The resultant film does not last so long as the plain pyroxylin solution. An acetate varnish can be made on the same lines:

Cellulose acetate	50 g	350 grs.
Tetrachlorethane	500 ccm	8 oz.
Alcohol 95°	250 ccm	4 oz.
Benzol	250 ccm	4 oz.

To avoid any acidity, which might attack the metal, it is advisable to add 1 per cent of urea to the above. Black varnish can be made by incorporating finely powdered lampblack, and the resultant surface will be more or less matt. For glossy surfaces a spirit-soluble aniline black should be used, such as one of the nigrosins. Colored varnishes for dark-room work are best prepared by the use of acetyl red and acetyl yellow, and the best base is:

Cellulose acetate	80 g	560 gr.
Acetone	1000 ccm	16 oz.
Benzyl alcohol	40 ccm	280 min.

Or the tetrachlorethane mixture given above may be used. (*Chim. et Ind.*, 1921, **6**, 283). Waste celluloid camera film can, of course, be used instead of the pyroxyline, if freed from the gelatine coatings by treatment with warm, not hot, water. Very hard tough varnishes can thus be prepared, though as a rule rather less of the celluloid will be needed.

Carbon Printing. — A. Stefgen has patented the washing out of the soluble chromates from exposed carbon tissues with water, dilute alcohol, or acids or alkalis. Prints thus treated can be rendered amenable to the usual transfer and development processes by subsequent treatment with sugar, glycerine or soap. (*D. R. Pat.*, 338,185, 1920; *Phot. Korr.*, 1921 **58**, 263). The particular value of this process is not obvious, unless it be that one can expose a number of carbon tissues, then wash as above described and subsequently develop. Of course, this process would obviate any of the well-known continuating action of light, which takes place if the prints are not developed soon after exposure.

Stress or Abrasion Marks on Velox Paper.— R. W. Harrison states that he has found that the addition of 4 drams of a 10 per cent solution of hypo to a quart of elon-hydro (metol-hydro) developer is an efficient preventive of these troubles and is superior to iodide, which is commonly used for this purpose. (*Brit. J. Phot.*, 1921, **68**, 662). This is practically the addition of 0.156 per cent of dry hypo. It is curious that this should be put forward as a novelty. I was under the impression that it was not only well known, but generally used.

Photo-Bromide and Dyes. — Lüppo-Cramer has discovered that a photo-bromide analagous to the compound obtained by Carey Lea by the action of ferrous citrate on colloidal solutions of silver bromide may be made by the addition of certain dyes. Thus for instance, 5 to 10 ccm of a 1:2000 solution of the dye to 500 ccm of a 0.2 per cent silver bromide will in a short time give a voluminous precipitate. To this strong nitric acid was added, which dissolved the absorbed metallic silver and left a beautiful rose-red to reddish violet photo-bromide. Methyl violet, methylene blue, safranin, pinachrome and pinaflavol gave the best results. These are all basic dyes, and acid dyes were found not to give the results. (*Phot. Ind.*, 1922, 15). Carey Lea's photo-salts were most marvelous products and of all colors, and he was able to prepare silver in every shade from black to red, green and gold; this last being very beautiful and of extraordinary lasting properties. Very little attention has been paid to Lea's work, though it is of great interest from a theoretical point of view. His papers appeared in *Amer. J. Science*, 1887; 1889, and *Brit. J. Phot.*, 1889.

Silver Chloride not Sensitive to Light. — F. Weigert advances a new theory as to the action of light in the printing-out process. He has analytically determined that the darkening must be ascribed to the excess silver salts, and deduces that silver chloride itself is neither sensitive to light, nor furnishes the silver that forms the image (*Sitzungsber. Preuss. Akad. Wiss.*, 1921, 641; *Phot. Ind.*, 1921, 1029). We live and learn. If this statement be correct, how is it that we can develop an image on a silver chloride emulsion plate? It certainly is possible to do this, and also to print out on silver chloride prepared with excess of halides, though the image is not very intense. But if any chlorine absorbent is present then an intense image is obtained; for instance one may use potassium nitrite, metabisulphite or stannous chloride. The excess of silver nitrate or organic silver salts, citrates or tartrates being generally used, merely absorb the chlorine set free by the action of light, thus forming fresh chloride which is in turn decomposed. R. E. Liesegang (*Phot. Korr.*, 1899, **36**, 79) actually proved that there was less of the free silver salts in the exposed parts. It is true that Carey Lea, Abney and Baker (*Chem. News*, 1891, **63**, 244) found that perfectly dry silver chloride in a vacuum was insensitive to light, or at least that no visible darkening took place. But as the chemical reaction is reversible this is easily understood, for as soon as the chlorine was split off it would immediately recombine. When exposed under benzol, dry silver chloride does darken as the chlorine set free combines with the benzol; but if tetrachlormethane (carbon tetrachloride) be used it is "insensitive" as the liquid cannot absorb more chlorine.

Silumin. — A new aluminium alloy has been introduced in Germany under this name. It consists of 11 to 14 per cent of silicium combined with aluminium. By the use of certain fluxes and physico-chemical treatment these two elements, which from the metallurgical point of view have hitherto been considered inimical to one another, have been induced to combine into a useful alloy. It is 10 per cent lighter than pure aluminium, or the usual alloys with copper and zinc. Its hardness is 25 to 30 per cent greater than the other alloys; its stretch more than twice as great, therefore, cracks in casting are less likely to occur. Its Brinell shock hardness is 25 per cent greater than the other alloys. Wet and super-heated steam have practically no action on it; 25 per cent, as well as strong, nitric acid attack it less than pure aluminium. The raw materials cost about the same as pure aluminium and its ultimate cost is no greater than the other alloys. It can be worked, cut, polished, soldered or welded and should be useful for camera parts or other optical articles. (*Phot. Ind.*, 1921, 1046).

Clerk Maxwell's Theory and Practice. — Everyone presumably knows that Clerk Maxwell was the first to suggest that it should be possible to reproduce the colors of nature by photography, using three filters or color screens, red, green and blue-violet. And he actually showed some sort of result. It has always been assumed that he used the three filters for taking the negatives and projecting the positives. This has become axiomatic and it is a very good example of how a fact can be distorted and perpetuated. Someone assumed, because Maxwell proposed the three filters, that he used the same; but delving among some of the old journals on another matter I came across an account of the photographic work as carried out by T. Sutton for Maxwell (*Brit. J. Phot.*, 1861, **8**, 272; *Phot. News*, 1861, **5**, 375; *Phot. Notes*, 1861, 169). In the last named journal Sutton gives an account of the process employed. The wet collodion plate with silver iodide was used for the negatives and *four* were made with red, green, yellow and blue liquid filters. From these, transparencies were made on collodion dry plates by the tannin process, which were projected through the four filters used for making the negatives. Thus it will be seen that Maxwell's process was actually a four-color one. (*Brit. J. Phot.*, 1921, **68**, *Col. Phot. Supp.*, **15**, 47).

Bleacher for Sulphide Toning. — H. C. Inskeep recommends the following stock solutions for bleaching prints for the sulphide toning, and they will keep indefinitely:

A. Hydrochloric acid, 10 per cent solution.

B. Potassium permanganate, 5 per cent solution.

For use add 1 part B to 16 parts A; discard as soon as any sign of discoloration or turbidity appears. The bleached prints should be transferred direct, without washing, to the sulphide bath, which should be no stronger than 0.4 per cent of sodium sulphide. If this bath does not remove the permanganate stain, a 1 per cent solution of potassium metabisulphite should be used. If the color of a sulphided print is not satisfactory it may be bleached in the above bath and resulphided with a 0.2 per cent sulphide solution. Of if a black tone is desired, redevelop the print with:

Amidol	3 g	30 gr.
Sodium sulphite, cryst.	37.5 g	¾ oz.
Potassium metabisulphite	8 g	80 gr.
Water	1000 ccm	16 oz.

Pass the print through the hypo bath, wash and dry. (*Brit. J. Phot.*, 1921, **68**, 339).

THE COLOR OF THE SKY AT NIGHT. — Lord Rayleigh found that the intensity of the sky light at night was too feeble to permit of its being tested spectroscopically, so Ilford panchromatic plates were exposed under a neutral wedge behind color filters with narrow transmission bands, and of such transparency that they gave practically equal action on the plate by daylight. Exposures were made at night and also by day and the conclusion arrived at were that the night sky is practically the same color as direct sunlight or moonlight, but much yellower than the clear-day sky. The results obtained contradict the theory that the light of the sky is caused by sunlight scattered by a very rare gaseous atmosphere at such a height as to be outside the earth shadow, and this contradiction is emphasized by the absence of polarization. The paper is interesting and should be consulted for full details. (*Proc. Roy. Soc.*, 1921 **99A**, 10; abst. *Sci. Tech. Ind. Phot.*, 1921, **1**, 109).

DEVELOPMENT IN TWO DISHES. — H. L. D'Allaines has patented a method of development in two baths; the first to be a strong one, which is to be allowed to act until there is slight surface fog, and the second much weaker, the time in each being the same. The particular formulas recommended are:

	1st.	2nd.
Amidol	5 g	2.5 g
Salt, sat. sol.	15 ccm	1.5 ccm
Sodium bisulphite sol.	50 ccm	5.0 ccm
Water	1000 ccm	1000 ccm

(*Fr. Pat.*, 522,919, 1919; abst. *Sci. Tech. Ind. Phot.*, 1921, **1**, 111). This particular method and the formulas were given by A. Calvet (*Bull. Soc. Franc. Phot.*, 1911, **58**, 329) and are a reversion to the old method first suggested with pyro, I believe by Abney in 1880, of immersing a plate in a strong developer and then dropping it into a dish of water, thus allowing the reducing agent absorbed by the gelatine to be diluted and act further. A lot of time and ink, printer's and otherwise, would be saved if it was recognized once for all that no amount of faking the developer or development will alter the action of light on the sensitive salts, and that by dilution or strengthening of the developer in the first place, and varying the duration of development in the second place, with a given and constant developer, any desired result in the way of density can be obtained. Practically it may be said that assuming a properly compounded developing solution be used, variation of time and temperature will give any desired range of softness or hardness in the negatives, and no amount of faking will put into the plate, or take out of it, the results of exposure.

KEEPING PERSULPHATES — K. Elbs & P. Neher state that the alkaline persulphates may be kept for years unchanged if dry and protected from sunlight. At ordinary temperatures their aqueous solutions show appreciable change after some days, and this is increased by higher temperatures and sunlight. The sodium salt is more stable than the ammonium and potash salts. The addition of sodium decreases the velocity of decomposition; while the presence of sulphuric acid, even 5 per cent, increases it 5 to 10 times (*Chem. Ztg.*, 1921, **45**, 1113; abst., *J. S. C. I.*, 1921, **40**, 887A).

REVERSED DYE IMAGES. — J. I. Crabtree, in a communication from the Kodak Research Laboratory, points out that reversed dye images can be made by first dyeing an ordinary silver image with a dye that can be reduced to the leuco base, which is more readily washed out than the dye itself. He suggests immersing the film in a 1 per cent solution of methylene blue plus 0.1 per cent ammonia for 2 or 3 minutes, then bleaching in an acid fixing bath of the following composition:

Hypo	50 g	350 gr.
Acid hardener	25 ccm	175 minims
Water	1000 ccm	16 oz.

The acid hardener is:

Alum	56 g	392 gr.
Sodium sulphite	56 g	392 gr.
Acetic acid 28%	400 ccm	6½ oz.
Water to	1000 ccm	16 oz.

Bleach till the shadows are black and free from dye, then wash for 10 minutes and dissolve the silver image with:

Hypo	25 g	175 gr.
Potassium ferricyanide	10 g	70 gr.
Water	1000 ccm	16 oz.

As soon as all the silver is removed, wash 5 or 10 minutes and dry. Positive dye images were obtainable by only slightly washing after the above acid hypo bath, then on immersion in the Farmer's reducer the silver ferrocyanide formed acts as a mordant for the leuco base, whilst the dye is washed out. Crabtree assumes the formation of sodium hydrosulphite as the bleaching agent. R. E. Crowther is inclined to support this view and suggests that the metallic silver acts as a catalyst. Crabtree says that very peculiar line images are obtained if the bleaching is carried beyond a certain point, as the dye in the highlights commences to bleach, and on subsequently removing the silver, so as to reverse the image, white lines are produced. (*Brit. J. Phot.*, 1921, **68**, 46). It is curious how things crop up again. E. Lobel in *La Technique Cinematographique*, Paris, 1912, 280, says when dealing with the tinting of film, that to produce night effects a 1% solution of methylene blue is generally used; but methylene blue cannot be used with films toned sepia by sulphurization because it produces white zones round the outlines of objects. This trouble is not met with if a 1% solution of Bleu de Lyon be used. The film is first tinted, then bleached in the ferricyanide bath, washed and then passed into a sulphurizing bath. The blue coloration reappears at the same time as the image is sulphurized." As the sepia image is nothing but silver sulphide, it would seem as though this acts as the bleach for the dye and converts it into the colorless leuco base. Methylene blue is a basic thiazine dye, whilst bleu de Lyon, also known as water blue, and a host of other names, is an acid dye, and a mixture of the sulphonic salts of tri- and di-phenyl rosaniline, which is not easy to reduce to the leuco base. The method given by Lobel for sulphurizing is first bleaching with ferricyanide and chloride or bromide, and then immersing in a mixture of 0.5% hypo and 0.5% sodium sulphide; the action of this is to sulphide part only of the image, while the rest dissolves in the hypo, so that a less opaque sepia image is obtained.

DYE INTENSIFICATION. — F. E. Ives suggests a method of intensification based on the absorption of dyes by a silver image. The negative should be immersed in:

Potassium ferricyanide	0.34 g	5 gr.
Ammonium bichromate	0.068 g	1 gr.
Glacial acetic acid	8.5 ccm	¼ oz.
Water	1000 ccm	30 oz.

Leave for a short time, but not enough to bleach the image, and then immerse in:

Victoria green	0.26 g	2½ gr.
Safranin	0.52 g	5 gr.
Glacial acetic acid	8.5 ccm	¼ oz.
Water	1000 ccm	30 oz.

Dye for from 30 to 120 seconds, then wash for 5 minutes (*Brit. J. Phot.*, 1921, **68**, 187). Both these dyes are relatively sensitive to light, therefore there is a great chance of the negative altering.

THE WATKINS FACTOR. — W. F. Ermen and R. E. Crowther find that the time of appearance and the development factor for monomet vary with varying quantities of sodium carbonate, and recommend the following as the best formula:

Monomet	1.6 g	11.2 gr.
Sodium sulphite, dry	5 g	35 gr.
Sodium carbonate, dry	5.3 g	37 gr.
Water	1000 ccm	16 oz.

The factor for this will be from 30 to 40. To enhance the keeping qualities, the monomet and sulphite may be dissolved in half the water, although a perfectly clear solution will not be obtained, and the carbonate in the other half; the two solutions being mixed just before use. For tank development, with a total time from 1 to 2 hours, they recommend:

Monomet	2 g	14 gr.
Sodium sulphite, dry	6 g	42 gr.
Water	1000 ccm	16 oz.

The salts should be dissolved separately and the solutions mixed. (*Brit. J. Phot.*, 1921, **68**, 168).

THE PROFESSIONAL'S DEVELOPER. — P. M. Jones stated that as the result of considerable experimenting he had found that metol-hydrochinon with caustic alkali was the best developer for professional work, and gave a formula which contained far too much caustic soda. W. Ermen pointed out that only 7.66 oz. were required to form the phenolates for the amount of metol-hydrochinon given, and this was less than half the quantity first recommended. "Half-Watt" stated that he had found the following to be an excellent formula:

Metol	12.75 g	180 gr.
Hydrochinon	25.5 g	360 gr.
Sodium sulphite, dry	94 g	3 oz.
Caustic soda	16 g	½ oz.
Water	1000 ccm	32 oz.

For use dilute 1 part with 24 parts water, which gives an excellent portrait negative in 5 minutes; the solution keeps well (*Brit. J. Phot.*, 1921, **68**, 107, 130, 179). The use of caustic alkalis with metol-hydro is no novelty, but a good thing is always worth noting.

A NON-HALATION PLATE. — Guilleminot, of Paris, has placed on the market a non-halation plate, which has a film of manganese peroxide, suspended in gelatine, under the emulsion, which, as M. Clerc points out, does away with the necessity of backing, which is not popular in France, save for panchromatic plates. The brown color of the peroxide disappears in an acid fixing bath. (*Brit. J. Phot.*, 1921, **68**, 135). Another antique revived. Magerstadt patented (*D. R. P.*, 73, 101, 1892; 77,270, 1893; *Eng. Pat.*, 5932, 1893; 9,270, 1894) an underlying film of gelatine stained with a red rosaniline, rosolic acid or other dye, and these plates have been on the German market ever since as "Isolar." C. E. Petit (*Eng. Pat.*, 8956, 1893) also claimed the same thing, and in 1894 (*Eng. Pat.*, 4606, 1893) claimed the use of quinine or other fluorescent substance, though how these could act is not obvious. Lumière also introduced similar plates in 1899. C. H. Oakley (*Eng. Pat.*, 2,986, 1895) patented the use of the underlying film of manganese peroxide and such plates were commercially available soon after.

D 50. — This is not a new drink nor an "Unterseeboot," but a new developer, which is said to be "a mixture of compounds, some of which are new to chemical science, of the phenolic type, and which have never been previously used for photographic developing purposes." It is most enthusiastically lauded by J. H. Gear, who states that he developed half a dozen 6½ x 8½ plates with 5 oz. of the solution and that the last negative was equal to the first. Its energy is greater than that of the majority of developers now in use, and consequently a shorter exposure is necessary; the negatives are free from color, have a long scale of gradation with great transparency, and yet a density equal to pyro can be easily produced. It is equally applicable to bromide and development papers, does not stain, and true sepias can be obtained with longer exposure. Dr. A. Abrahams, who is renowned for his high speed work, also speaks very highly of it, and although for his work he had always pinned his faith to weak pyro, he found D 50 gave equally as good results. It is marketed in the form of a solution and is used as follows:

A

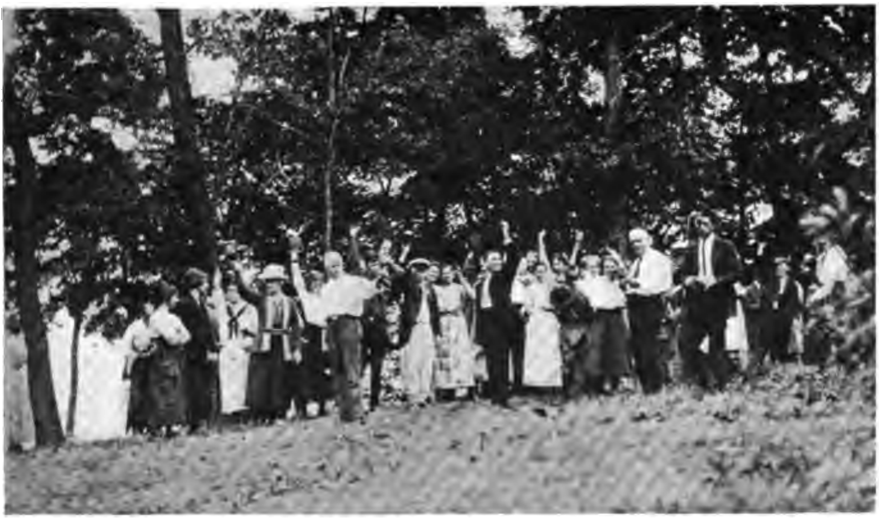
D 50, conc. sol.	50 ccm	350 minims
Water	1000 ccm	16 oz.

B

Sodium sulphite, dry	40 g	280 gr.
Sodium carbonate, cryst.	50 g	350 gr.
Potassium bromide	1 g	7 gr.
Water	1000 ccm	16 oz.

For use mix in equal parts. (*Brit. J. Phot.*, 1921, **68**, 307).

A. E. Salt also speaks very highly of it and he developed twelve half-plate bromide prints at irregular intervals over a period of five days, with 3 oz. of developer, the last print 45 hours after the preceding one. With the exception of the last print, which showed a good olive-green color, all the prints were a good black (*ibid.*, 446).



KODAK DAY FLORENCE L. CLARK

NATURE AND WILD LIFE

In compliance with the request of numerous readers for a department of this character, we are ready to publish from time to time interesting pictures from the domain of natural history, plants, animals and birds, etc. We invite our readers to submit for publication any photographs they may have taken that would be suitable for reproduction in this department. In sending us such pictures, select those that are unusual in subject and let us have interesting facts connected with the subject as well as data as to how the picture was made. Our first picture shows an incident that took place one morning in August at the American School of Wild Life Protection which annually holds a midsummer session on McGregor Heights, a high, forested hill at McGregor, Iowa, overlooking the lovely Upper Mississippi. Here botanists, geologists, bird men, bug men, tree men, Indian lore experts, fish men and others too numerous to mention hold meetings in a big open tent and talk to the school about all of those out-of-door things. Between tent talks they go on excursions through the woods, over the hills and up and down the Mississippi, explaining the great, wonderful natural world and inspiring a protective love of wild life in the hearts of their eager listeners. The student body is as unusual as the school. Bankers, ministers, housewives, newly-weds, school teachers, boy scouts, college students, merchants, doctors, old men and women, whole families including babies in arms, all enroll each year and for two weeks have the freest, happiest and most profitable vacation imaginable. Of course at the school there is much kodaking and this picture was snapped by a quick-on-the-trigger kodaker just as the students were complying with the request of the leader — "Up with your Kodaks, let's see how many there are."

We publish also a picture of a fox made in Mexico and sent us by Mr. Juventino Ocampo, who gives us the following details: On returning home from one of my usual Sunday camera expeditions recently, I happened to see in a country house a cunning wild fox which, tied by a long, heavy chain, was walking backwards and forwards on the top of a wooden fence. It occurred to me that this animal would make nice pictures and I immediately secured permission to photograph it. For the heavy chain I substituted a strong cord which has been spotted out in the print; as it was drizzling and I did not like to expose my camera too long to the rain, I took only two pictures. The daisies appearing in the background are not the sort of flowers that would naturally be found in places where foxes abound. There was, however, no other suitable place to be found at that particular time. Made with a 5 x 7 Compact Graflex; *f*:6.3 Carl Zeiss lens of 9½ inches' focus; 1-50 second at *f*:6.3; Cloudy; 2 P. M. in October; plate not mentioned; pyro-soda developer; print on Artura Iris A.

ROUND WORLD EXCHANGE CLUB

A CORRECTION. The address of No. 1099, Peter Kendrick, was wrongly printed in the February issue as 317 South 4th St. The correct address is 417 South 4th St., Brooklyn, N. Y.

693 (old number) J. W. Jeffers, McClure Building, Frankfort, Ky. Vest pocket to 5 x 7 of almost

THE EXPECTANT FOX

Juventino Ocampo

any subject. None but good work sent or accepted. Subjects desired are such as are treated from an artistic standpoint.

1038 (old number) Albert Limoges, 17 High Street, St. Albans, Vt. 3A prints on Velox, unmounted, of landscapes, children and general subjects. Good work only forwarded and desired.

1171 Albin P. Mertes, R. F. D. No. 8, Fond du Lac, Wis. Various sizes, all made on D. O. P. Subjects various.

1172 Everett A. Preston, 373 Prospect Avenue, Milwaukee, Wisc. 3¼ x 5½, D. O. P. Scenic, Historical and Art subjects in black, sepia or green, with margin.

1173 Sidney Lehrfeld, 213 Waverly Avenue, Newark, N. J. Vest pocket, 4 x 5, postcard and 4 x 6, contact D. O. P. nature pictures, genre, etc. In return would like to have some art pictures.

1174 L. D. Hollingsworth Jr., Central Aguirre Sugar Company, Central Aguirre, Porto Rico. 3¼ x 5½, Azo contact prints of tropical scenes.

1175 Ray A. Brown, Box 976, Eastland, Texas, 3¼ x 5½, Velox or Azo, General Subjects.

1176 John A. Elkins, 415 West 30th St., Indianapolis, Indiana. 3¼ x 4¼, 8 x 10, Artura Contact prints and Bromide Enlargements, Landscape and General photography, figure studies.

1177 Robert E. Kissinger, 115 E. Ridge St., Lansford, Carbon Co., Penna. Postcard size, Azo prints, Coal Mining views.

1178 John P. Robinson, Box No. 8, Raton, New Mexico, U. S. A. 4 x 5, 3¼ x 4¼, D. O. P. on Azo and Velox, smoke effects, trains, mountain scenery, buildings, etc. for anything of general interest.

1179 P. Ballard, Jr., 613 Arthur Street, San Antonio, Texas. Postcard size, historical and foreign views and marine subjects.

1180 Stanley Clisby Arthur, 6043 Perrier Street, New Orleans, La., from 2¼ x 2¼ to 5 x 7 prints on single weight glossy paper of wildbird life of Louisiana and Labrador are offered in exchange for wildbird life prints from all over the world. Have over 1,000 negatives to make prints from and photographers of wild life in all parts of the world are invited to correspond. Will exchange lantern slides of bird life and wild animals.

1181 George R. Bennett, 629 East Utica Street, Buffalo, N. Y., 3¼ x 5½, Velox prints of scenery along Hudson River, Adirondack Mountains, Rocky Mountains, Garden of the Gods, Atlantic City, Cape Cod, etc.

1182 D. E. Pugh, Las Plumas, Butte County, Calif. 3¼ x 5½, Azo prints, Hydroelectric Plant and Mountain Views.

1183 Earl A. Ransdell, 707 Eastern Avenue, Connersville, Indiana, 2½ x 4¼, 5 x 7, D. O. Papers, Landscapes, Indiana Views.

1184 H. W. Pontin, 48 Raymond Street, Allston 34, Mass. Postcard, 5 x 7, 8 x 10, contact prints and Bromide enlargements, Railroad trains in motion, locomotives — all types.

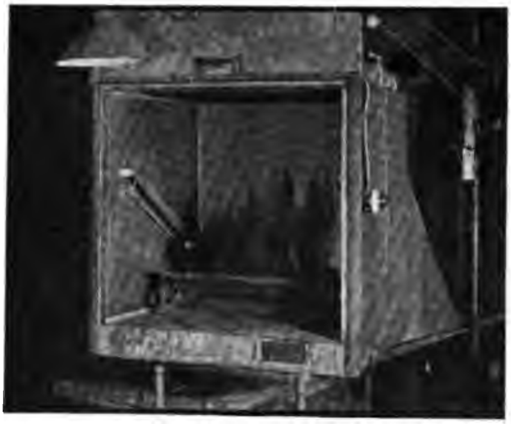
1185 William L. Haemer, 150 Ralph Avenue, Brooklyn, N. Y. 3¼ x 5½ to 6½ x 8½, Cyko, Azo, Artura and Mimosa, figure studies, marine and landscape exchanged for similar subjects. Only good work accepted.

1186 Edward Marshall, Pawnee, Illinois, offers to exchange with photographers in the United States only 3¼ x 4¼, 3¼ x 5½, Solio prints, miscellaneous city and country scenes.

1187 Alta Wald, P. O. Box 52, Cornwell's Heights, Penna. Size, subject, etc., not specified.

1188 Edward J. Wurtz, 141 Centre Street, Roxbury, Mass. 2¼ x 3¼, 5 x 7, D. O. Prints, also enlargements of Landscapes, Buildings, Marine and Historical Views.

1189 Louis M. Harrison, 120 Union Street, St. John, N. B., Canada. Postcard and 5 x 7, D. O Prints, Sports, Fires and Landscapes in this

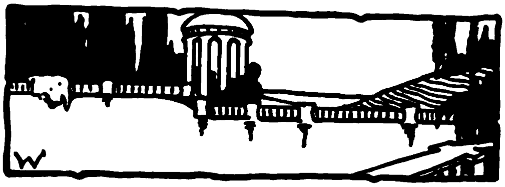


George I. Kirkgasser

vicinity, also a few landscapes, genre, etc., near Savannah, Ga.

1190 Harold Isaacson, 900 Riverside Drive, New York City. 3¼ x 5½, mining views from Iowa.

1191 Francis A. King, 85 Church Street, Charleston, S. C. 4 x 5 ,D. O. Prints, Old Buildings, Churches and Gates.



PRACTICAL HINTS

Providing Dry Heat in Photograph Negative Cabinets — The foreman of a large engraving plant, in order to provide an even, dry heat in cabinets used for drying the glass photographic negatives, experimented with various kinds of heat and several designs of cabinets. The outcome was successful when he applied two sheathed electric heaters, one of which may be seen mounted on one side of the cabinet. The even, dry heat and the ease of control by means of the switch located on the outside of the cabinet proved to be just what was wanted. The elimination of any open flame removed the danger of fire in the presence of the collodion and benzol solutions and vapors. — George I. Kirkgasser.

Shooting Night Pictures With a Three Dollar Camera — No doubt, from the windows of your home, you see many interesting night scenes that you would like to take with a camera, but you don't know just how to go about it. It is very easy, even with the cheapest cameras. The specimen shown here was taken with a three dollar box camera.

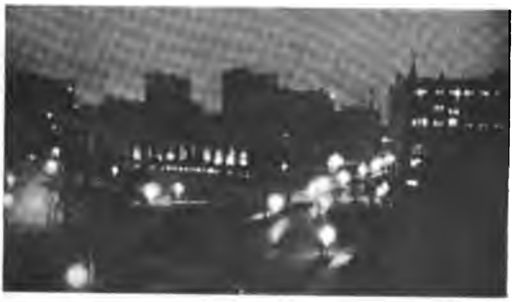
First of all, find your subject, then find a place to set your camera — a place that is solid and not subject to vibrations from passing cars or automobiles. Setting the camera up, you take the picture, just the same as any other time exposure, only the average night scene should be given at least thirty minutes time. This thirty minutes is not enough to get in the details of a building, so you close the camera and let it remain where it is for the remainder of the night, being sure that it is not moved at all, and then, about seven o'clock in the morning, or just before the sun comes up, expose again, not making a time exposure, but making it just the same as a snapshot. This will give the details and the sky line, as in the picture. Without this extra exposure you will get no details of the buildings, just lights. If you take a picture of a street where there are a great many passing automobiles you will get a lot of white streaks across your picture. These are from the lights of the moving automobiles. The only way to prevent this is to cover the lens every time an auto passes. There is no need to close the shutter each time, just hold your hand in front of the lens. — Cobb X. Shinn.

A Rapid and Accurate Method of Trimming.— Anyone who is engaged in the business of framing pictures, will, sooner or later, find himself called upon to do trimming and mounting for amateurs, even if he does not do developing and printing. The writer, at one time, had a good deal of this work to do, not only for amateurs, but also for professional photographers, who had very small places, in the little outlying districts, and who sometimes in the summer, had a rush of business, which their limited equipment would not allow them to handle rapidly.

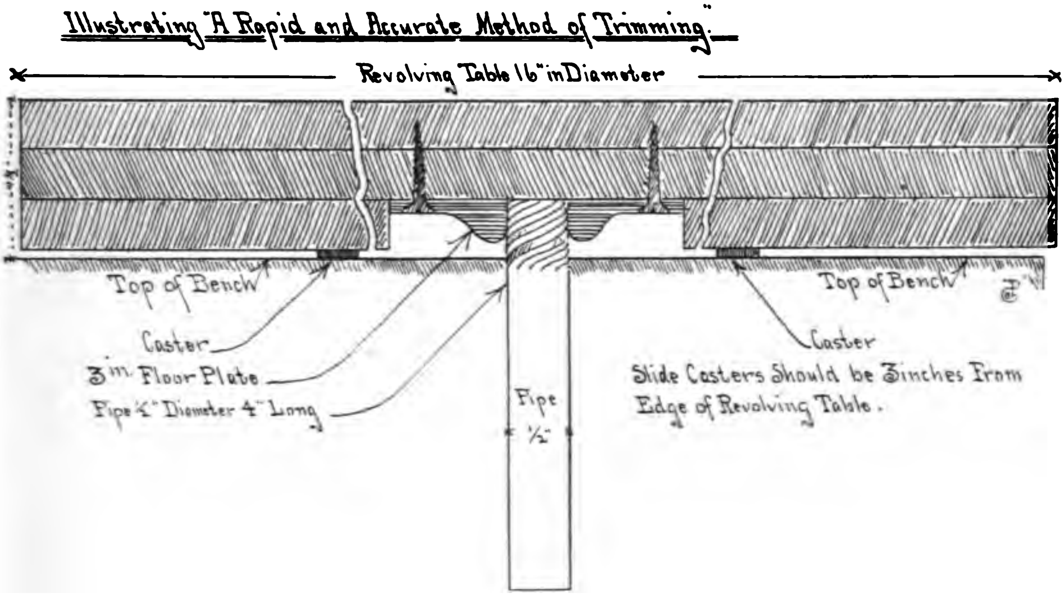
One of the writer's patrons was a retired New York business man, a Frenchman of great wealth. This gentleman was in the habit of spending nearly every summer abroad, and after one such trip, which included France, Switzerland, Italy, and parts of Austria and Germany, he returned with between eight hundred and one thousand prints, which he had accumulated on his travels.

These prints were of various shapes and sizes, but they were all to be trimmed to two sizes, in order to be mounted in albums, which he had had made in Paris for that purpose. They were bound in seal and the removable leaves were pale cream, about one eighth inch thick with burnished gold edges. There were twenty-five leaves in each, and each page was intended to hold two pictures, 3½ x 5, with ½" space between them, or one picture, 5 x 7½. As he had six albums to be filled with the smaller size, and four with the larger, this meant 600 prints of one size, and 200 of the other, to be trimmed and mounted in the albums.

The mere trimming and mounting of these prints



SHOOTING NIGHT PICTURES WITH A THREE DOLLAR CAMERA Cobb X. Shinn


Illustrating "A Rapid and Accurate Method of Trimming."
Revolving Table 16" in Diameter
Top of Bench
Caster
3 in. Floor Plate
Pipe ¼" Diameter 4" Long
Pipe
½"
Top of Bench
Caster
Slide Casters Should be 3 inches From Edge of Revolving Table.

was job enough in itself, but to make matters worse, the customer insisted on personally supervising the trimming of each print, as he wanted to see the effect before it was trimmed. It was suggested to him, that he trim them himself, but this he would not hear of. As it was impossible to take time for him to arrange each print and then trim in the regular way, the following method was devised and adopted. It proved so successful that it was retained as a part of the regular equipment of the work-room.

The size described was one suited to the writer's needs, but it can be easily varied to meet individual requirements. As anyone can easily do the work necessary to make it, and as the expense is small, not over 75c. to $1.00, anyone could have one. The writer's cost him less than 40c.

Take three pieces of ½" stock, about 16" square. The sides of an old shoe box will answer admirably. Take one of them and center it, by drawing two lines across it, diagonally, from the corners. Now take a compass, with a pencil attachment, and draw three circles, one as large as the size of the board will permit, a smaller one, three inches inside the first, and a still smaller one, the size of a floor-plate, which, with a 4" piece of pipe to fit it, and 5 or 6 slide casters are all the material required. The pipe should be from ½" to ¾" in diameter.

If a 3" extension bit is available, bore out the circle in the center, provided the floor-plate is a 3" one. If not, bore it the size of your plate. It may be cut out with a compass saw, or a series of holes may be bored with a brace and bit, thus taking out a piece in the center: but in either case, the edges should be carefully trimmed down evenly.

The three pieces should now be glued together, the grain of the two outside pieces running in the same direction, while that of the center board runs in the opposite direction. The board with the circles should be on the outside, so that the lines will show. The glue should be allowed to set from 24 to 36 hours. After the glue has thoroughly set, trim off the board with a compass saw, close to outside circle, smoothing it down with a spoke-shave, or a block-plane will answer, on a pinch.

Now place the floor-plate in the hole, and fasten it with screws. The plate must not project above the surface of the board: if it does, either it must be filed off, or the hole deepened.

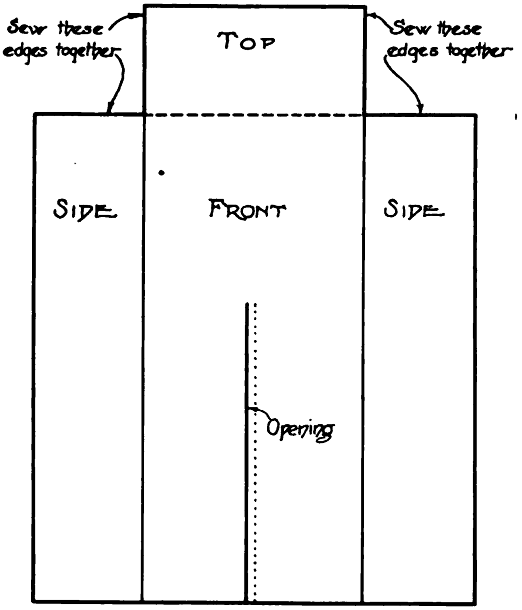
The four inch length of pipe is now screwed into the floor-plate, as tightly as it will go. The pipe, of course, must be threaded on one end, to fit the plate.

The slide casters or domes of silence are now fastened along the second circle, placing them at equal distances apart.

Bore a hole in the work bench, that will permit the pipe to turn freely and yet not "wobble." It should be so placed that when the board is in position, the pipe being in the hole, the edge of the board will project a little less than 3" beyond the edge of the bench. The slide casters allow the board to revolve with very little effort, and it is kept from turning by slightly leaning the weight of the body against it.

Two pieces of plate glass were now needed, and as the writer happened to have a large piece, two pieces of the size required were soon cut. They were slightly smaller than the sizes of the prints. As the edges of the glass were sharp, and there was no place in the city where they could be ground down, a groove was cut in a short piece of board, a little wider than the glass was thick, about a foot long, and about ½" deep. This groove was partially filled with coarse emery, and by holding the glass on edge on this groove, and running it back and forth, the emery quickly smoothed off the sharp edges of the glass. If emery is not available, white sand will answer.

Instead of using a knife to trim with, the writer secured one of the "Red Devil" glass cutters, one in which the steel cutting wheel can be replaced, a half dozen extra wheels coming with each cutter. This cutter made a clean cut, trimming the print very smoothly, and required no sharpening, the cutting wheel being thrown away when it became dull, and replaced by a new one. A good many prints, how-



An Amateur's Darkroom.

M. E. Hopkins

ever, can be trimmed, before the wheel becomes dull.

Two pieces of zinc, about 7" x 9" were used to cut on for this particular job, but after it was completed a a circular piece of zinc, slightly smaller than the board, was fastened permanently in place.

All being in readiness, the customer was notified, and he came in one morning, bringing in the whole bunch of prints, nearly a thousand of them. He had arranged them in two lots, one of which was to be trimmed to the larger size, and the other, the smaller. The two zinc plates, the two pieces of plate glass, and the two piles of prints, were placed on the bench in front of him. Laying the glass on one of the larger prints, he shifted it until the part he desired to retain, was covered by the glass, the print and glass being on a zinc plate. This was passed over to the writer, who placed it in the center of the revolving board. Holding the glass in place with one hand, with the other, the cutter was drawn quickly across the top from left to right, and then along the end, from top to bottom, thus trimming two sides of the print. The board was then quickly turned, bringing the other sides of the print into position, when they were cut with two quick strokes. The print was then placed to one side, and the glass and zinc passed back to the customer. He stated that he could arrange the prints faster than the writer could trim them, but after an hour's work, he found that four or five prints could be trimmed while he was arranging one, and so he quit, saying he would rather leave the entire matter of trimming with the writer. Working alone, the writer trimmed the entire lot in one quarter of the time he could have done it with help.

This trimming board was used as long as the business was continued, and was very satisfactory.

When trimming prints of several sizes, steel squares of various sizes were used, in the place of the glass forms, which were used only when a large number of prints of the same size were to be trimmed.

The print was laid in the center of the revolving table, and the square placed upon it, the short arm being at the right and the long arm at the top of the print. When arranged as desired, hold the square firmly with the left hand, and with the right draw the knife from left to right across the top of the print, and then along the end from top to bottom. Lift the square, revolve the table and print, and replace the square. Be sure that the corners are square. Do this as follows; suppose a 5 x 7 print is to be trimmed to 4 x 6. Trim top and right hand side of print as described, then turn the board and print. Lay the square on the print, so that the figure 6 will come to the left hand edge of the print, and the figure, 4 will be at the bottom edge at the right. See that the marks on the graduated scale, indicating 4 and 6, parallel the edge of the print, or rather, follow it. If this is done, the corners of the print will be exactly square.

An ordinary pocket knife will answer, but a good kitchen knife is better, as the blade is flat, and not apt to run off on the square. If much trimming is to be done, however, a knife made for the purpose may be obtained. The blade is about 10" long, ¾" wide, and of a corresponding thickness. It runs entirely through a wooden handle, and is movable, being held in place by a set screw. This allows the point to be drawn within the handle, for protection. The blade has a long, sharp point, the side of the blade next the straight-edge being perfectly flat, the front being beveled, and the upper edge of the blade and the cutting edge forming an acute angle.

With this kind of apparatus, the writer has trimmed a gross of prints in a few minutes, where they were all of the same size and subject, 25 or 30 being trimmed at once.

The knives were kept sharp as follows. Three blocks were prepared, 8" x 2" x 1". Three grades of emery cloth were used, coarse, medium and fine. The amateur, however, would need but one, the medium. A strip of cloth is cut the length of the block, but one inch wider. This is nailed along each edge of the block, running over each edge ½" and fastened with small tacks. The block may be made a couple of inches longer than the emery cloth, and a hole be made in it, to hang it up by. This block, covered with emery cloth, is a very fine way of keeping the knives in shape, giving just the kind of edge required for cutting paper and cardboard. Giving the blade a turn or two on such a block, after making ten or a dozen cuts, will keep the knife edge in fine shape. The writer has often taken wet tissue paper, laid it on a piece of cardboard, and holding one end of the tissue so that it would not slip, taken a knife sharpened in this way and cut the tissue without tearing it. If one has much of this kind of work to do, the three grades of emery cloth give better results, but otherwise, the medium grade or the fine, as preferred, is all that is necessary. The writer used these methods of trimming for years. — Geo. Reed Stevens.

Photography in a Bedroom — A comfortable workroom, ready for use in five or ten minutes, and then, when work is done, everything tidy and shipshape inside of another ten minutes or so, is the dream of every amateur photographer who has no place to use except his bedroom or the boarding-house bathroom. I know all the markeshifts resorted to under these circumstances, but at last I

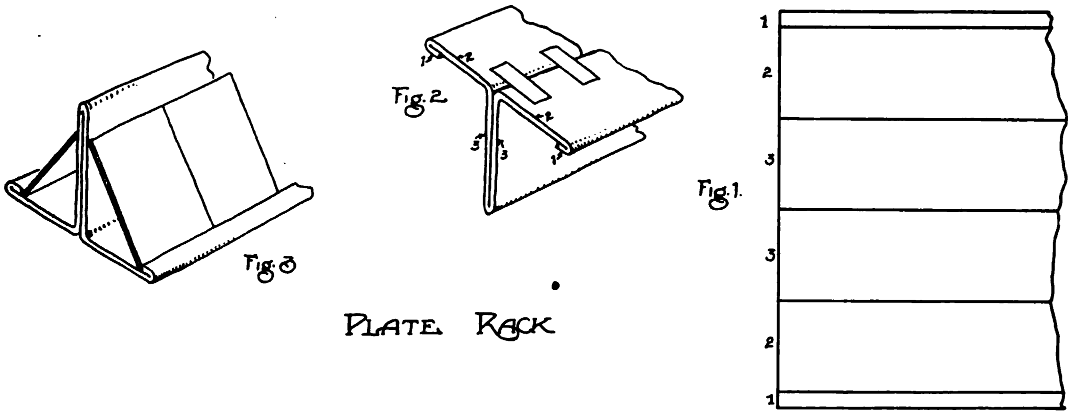


PLATE RACK

M. E. HOPKINS

have worked out a most convenient darkroom and it is all so compact, no one would guess a photograph was ever made in the room.

An old fashioned wardrobe with two drawers in the base, above which is a hanging section with shelves in the top, is the darkroom. The hanging section has two doors about 24 inches wide. On the inside of each door, close to the top and outer edge, is placed a three-quarter inch screweye into which are hooked the bent ends of a half inch iron rod that is as long as the door opening. This iron rod keeps the doors open and steady when the curtains, shown in the diagram, are hung over the doors. These curtains are made of closely woven, dark material, such as denim, galatea, etc.

The bottom of the hanging section is used for a workbench where all the bottles of mixed solutions are kept ready for instant use beside the necessary developing, rinsing and fixing trays. Since the doors are twenty-four inches wide, there is ample standing room in front of the bench when they are open and the curtain in place.

A Brownie safelight hangs from a clothes hook in the bottom of the shelf in the top of the hanging section. This gives plenty of light. From another hook is hung a large rubber bag with a long tube which furnishes enough water for one evening's work. A metal shut-off on the tube controls the flow of the water.

The diagram will show just how the curtain is made. It should be long enough to reach from the top of the doors to the floor, while the top and side pieces should be about three inches wider than the width of the doors. This extra width gives plenty of material to fasten to the edge of the wardrobe with glass headed pushpins, thereby shutting out any rays of light that might creep in through the cracks between the hinged edges of the doors when they are open. Entrance to the darkroom is through a long slit cut in the front of the curtain that is finished like the placket of a skirt and fastened by means of a large snap fasteners. — MISS M. E. HOPKINS.

A DRYING RACK FOR GLASS PLATES. — The drying rack shown in the illustration is quickly and easily made of corrugated pasteboard and, by placing the negatives on it with the emulsion side down, comparatively little dust will collect on them. Fig. 1 shows the lay-out of the cardboard. The numbers, 1, 2, 3, etc. in Fig. 1 are repeated in like order in Fig. 2 to show the positions of the sides after the cardboard is bent along the lines shown in the diagram. Sides 1-1 are glued to sides 2-2, while sides 3-3 are brought together and held in place by gummed cloth tape as shown in Fig. 2, which illustrates the bottom of the rack. An end of the finished rack is shown in Fig. 3 with negatives in place, emulsion side turned down so that any dust that may settle on them will fall on the glass side. — MISS M. E. HOPKINS.

MASKING GLASS NEGATIVES. — We often find negatives with parts included that should never be printed. A good way to make permanent masks for such plates is to use strips of the gummed kraft paper that comes in rolls for fastening bundles. Place the strips on the glass side so that if it is ever necessary to remove them, they can be soaked off without injuring the emulsion. This method saves a lot of time in adjusting masks and provides a mask that never slips in the printing frame. — MISS M. E. HOPKINS.

A NEW, QUICK, CLEAN ELIMINATOR OF HYPO. — Chloramine T (sodium para-toluene-sulpho-chloramide), used in medicine and in the last war to a very great extent, can be used to advantage in photography also as a hypo eliminator. A plate or film, after being fixed, is washed in running water for a minute or two and is then placed in a solution of chloramine T (one tablet dissolved on 4 oz. water) for two or three minutes. It is then washed again for a few minutes and dried. Or it may be treated with formaldehyde and dried by heat. This treatment of the film assures the amateur photographer that all the hypo is gone and it takes only a very short time. A plate or film treated in this way will not decolorize a very weak solution of potassium permanganate, proving that there can be no hypo present.

The following equations show what takes pace: —

$$CH_3C_6H_4SO\ ONaNCl + H_2O = CH_3C_6H_4SIO_2NH_2 + NaOCl.$$

$$Na_2S_2O_3 + 4NaOCl + H_2O = 2NaHSO_4 + 4NaCl$$

$$2Na_2S_2O_3 + NaOCl + H_2O = Na_2S_4O_6 + 2NaOH + NaCl$$

The tablets are very cheap, about 68 cents per hundred, or they may be purchased in bulk much cheaper. For photographic use they do not have to be made as carefully as for use in medicine. The strength of the solutions can be tested from time to time by adding a little potassium iodide to a little of the solution and if there is a liberation of iodine, they are still in good condition to be used for more plates or films. — ELMER F. SHELBERG.

A POCKET HANDKERCHIEF FOCUSING SCREEN. —A focusing screen that you can carry in your pocket and with which you can wipe your shoes and face? Impossible! Not at all, not at all. Get out your Kodak, Brownie, or whatever kind of camera you possess, beg, borrow or steal one of Ma's handkerchiefs '(cambric is best, though cotton will do), then fix the handkerchief in the place where the film goes, set your shutter on time, open the lens and, covering your head with a blanket or some other old rag to keep the light off the handkerchief, look through the camera. If you do not see anything at first, point the camera out of the window until you get used to your focusing screen. Here's the way I fixed the handkerchief in my own camera. I took an old cotton handkerchief and cut it the width of the film and long enough to pass under the rollers just as a film would do. I pulled it tight and pinned it. If you have two old film spools, a better way would be to cut a long piece of the handkerchief and wind it on one spool, threading it through the camera just as you do a film. You can then be sure that it will be in the exact place where the film would be.

Here are a few ways in which you can use this information: If your focusing scale lies to you, or the finder tells you that something is in the picture when it isn't, you can consult your pocket handkerchief and find out just where the trouble is. Then, when you buy a portrait attachment, it will be a good scheme to try it out and see what it will and will not do before taking any pictures with it. Also, if you are going to take a *very* important picture, for instance, that of your best girl's mother, you can focus the empty camera and, being careful not to move it, you can put the film in. Then you will know just what kind of a picture you will get. If I seem to have slighted the users of the plate cameras I wish to say it is because I use films and not plates. I know that they can use this information and I would advise them to paste it in their carrying cases. When they break the ground-glass just before they get ready to take a picture, they can tear a piece off a handkerchief and, using four pins, fix it in the place of the focusing screen. — EDWARD CLOUDMAN.

ANSCO FORMULAS FOR TANK DEVELOPMENT OF ROLL FILM

THE increasing use of Ansco Speedex Film has brought so many new requests from all parts of the country for authorized tank formulas that publicity is given to the following by means of this article. These formulas (or rather, this formula, for it is the same formula written for different quantities of solution) will give results of the desired quality with Ansco Speedex Film, at the same time being so adjusted as to bring out the best film of other makes. In fact, for compounding an all-round tank developer designed to yield the highest average of good negatives from varying exposures on all roll film we believe these new tables, worked out by a long series of comparative tests in the Ansco Research Laboratory, will be found the most satisfactory available to photo-finishers.

Solution A	1-gallon tank	5-gallon tank	10-gallon tank	20-gallon tank	40-gallon tank
Warm water	32 oz.	1 gallon	2 gallons	4 gallons	8 gallons
Metol	22 grains	¼ oz.	½ oz.	1 oz.	2 oz.
Sodium sulphite	¾ oz.	3¾ oz.	7½ oz.	15 oz.	1 lb. 14 oz.
Hydrochinon	90 grains	1 oz.	2 oz.	4 oz.	½ lb.
Sodium bisulphite	½ oz.	2½ oz.	5 oz.	10 oz.	1 lb. 4 oz.
Potassium bromide	5 grains	25 grains	50 grains	100 grains	200 grains
Sodium carbonate	1 oz.	5 oz.	10 oz.	1 lb. 4 oz.	2½ lbs.
Add cold water to make up to	2½ qts.	4¾ gal.	9½ gal.	19½ gal.	39 gal.
Solution B					
Cold water	16 oz.	32 ox.	½ gal.	½ gal.	1 gal.
Pyro	45 grains	½ oz.	1 oz.	2 oz.	4 oz.

Add B to A and develop 15 to 20 minutes at 65 degrees Fahrenheit according to density desired. For each degree below 65 degrees Fahrenheit, one minute should be added to the time of development chosen. For each degree above 35 degrees Fahrenheit, one minute should be subtracted from the chosen development time, provided the bath is fairly fresh.

Renewer					
Water	32 oz.	1 gal.	2 gal.	4 gal.	8 gal.
Metol	22 grains	¼ oz.	½ oz.	1 oz.	2 oz.
Sodium sulphite	2/5 oz.	2 oz.	4 oz.	½ lb.	1 lb.
Hydrochinon	45 grains	½ oz.	1 oz.	2 oz.	4 oz.
Sodium bisulphite	¼ oz.	1¼ oz.	2½ oz.	5 oz.	10 oz.
Sodium carbonate	2/5 oz.	2 oz.	4 oz.	½ lb.	1 lb.

The renewer is added from time to time to keep the developer even with the top of the tank and at the same time to freshen up the solution. A fresh bath should, however, be mixed up every two or three weeks at least, according to the number of rolls developed in the old solution.

SKETCH-BOOK LEAVES

RECORD PICTURES

Although this subject has been considered before in Sketch-Book Leaves, it is of such perennial interest that no apology need be offered for going into it again. The writer realizes, to be sure, that at a certain stage in his photographic career — somewhere between grass and hay, as the saying goes — the amateur is inclined to look condescendingly on the making of records, conceiving his mission in life to be the enrichment of the world and incidentally his own personality by the production of masterpieces of art, or at least of bold attempts in that direction. But, while recognizing that this attitude is as normal as growing pains and education, there is no reason to overlook the fact that the spread of photography as an avocation has been chiefly due to the serviceability of the camera in the business of making records.

The amateurs who have taken up photography in the first place as a means of "artistic expression" are few compared to those whose first attempts have been inspired by a wish to record certain matters of especial interest to themselves, whether of a scientific, a commercial, or a purely personal nature. The artistic interest has usually come afterwards, as a sort of by-product or digression, and though in many cases it has come to dominate, this is by no means the rule. The utility of the camera as a means of making records is still the chief reason for its use.

Record photography has a bread-and-butter quality to it. In a manner of speaking, it gives you something for your money. The pictorial effort which pleases its maker today may sicken him tomorrow, and eventually be used without compunction for starting the kitchen stove, but a good record of an event or scene of personal interest to the maker, or say of some natural phenomenon, somehow manages to get saved.

It has always been the writer's contention that an amateur photographer cannot be called proficient, however artistic the effect he may occasionally obtain, if he lacks the skill to make successful records— if, for instance, he is unable to bring back a good pictorial record of a motoring trip or vacation, or to select and render effectively the things of interest in his home.

To those who have never considered seriously the subject of record photography it may be suggested here that in this field of effort is ample play for keen minds and alert perceptions, and if a model is asked for, no better one can be offered than Brady, the photographer of the Civil War. There was a man who knew what to do with a camera and how to go about it. If you are not familiar with his work, go to the public library and ask for Brady's "Photographic History of the Civil War" (something like seven or eight large volumes), and marvel at the imagination and skill of this wet-collodion photographer who had to cart along a truck-load of paraphernalia wherever he went. Yet Brady brought home the bacon, and the negatives of his that remain are still in a beautiful state of preservation, though he himself died in poverty.

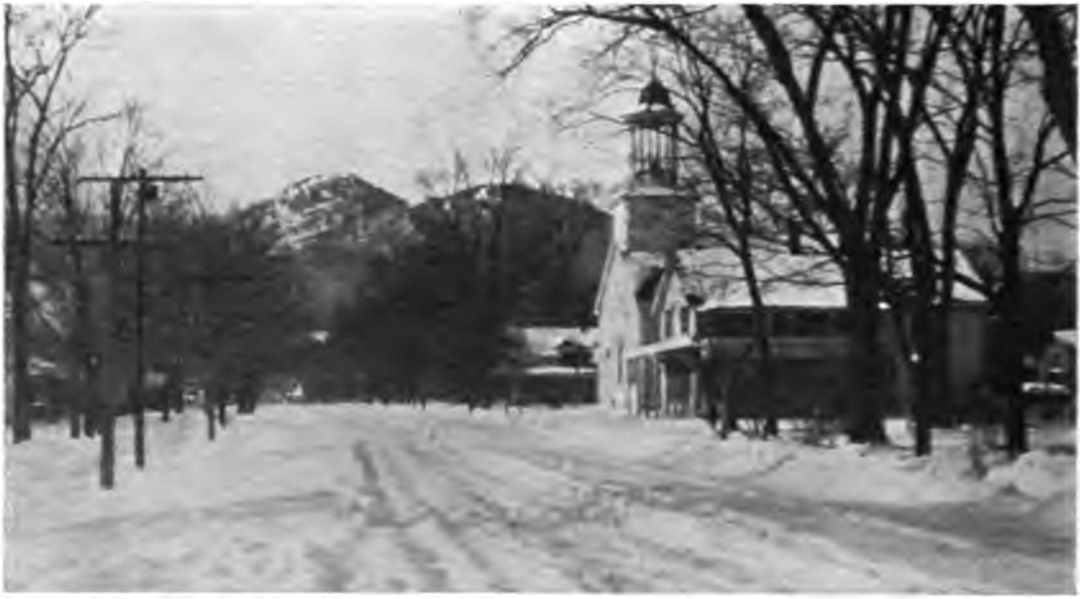
PINHOLE PICTURE MRS. STERLING SMITH

What Brady did for the Civil War most of us would find it worth while doing for ourselves. The scenes and circumstances among which we move may seem to have little of pictorial value, yet the continuous endeavor to make selections of the typical and characteristic and to photograph them well, will gradually build up an album of decidedly substantial interest, for neighborhoods, people, and we ourselves are constantly changing, and in these days of shifts in residence and occupation such a record may be unexpectedly valuable in time to come.

The emphasis has been placed on the making of records having a personal touch, records of things and people connected with one's life, but this is only because it is this phase of record photography which affects the largest number. It may also be said that record photography, like charity, begins at home, and those who become proficient in it for purely personal ends thereby equip themselves to use it effectively in science and the applied arts, and as an adjunct to various studies.

MORE PINHOLE PICTURES

From C. Underwood come two interesting pinhole pictures made in January in "Elizabethtown in the Adirondacks." As they are about eight inches long, the reproductions tend to sharpen up the focus, but the pictures are pleasing in both sizes. The pic-



PINHOLE PICTURE NO. 1 **C. UNDERWOOD**

ture which shows the church was given 3½ minutes exposure at 9.30 A. M. on a Seed Gilt Edge 30 plate. The other picture, taken a half hour later, was given 3 minutes. This view suggests the utility of the pinhole for wide-angle panoramas. Mr. Underwood does not state the distance from lens to shutter in either case.

The third picture reproduced, by Mrs. Sterling Smith, shows the west tower in the patio of the civic auditorium in San Diego, California. It was taken at noon in bright sunlight. The pinhole was of 1-50 of an inch diameter and the extension seven inches; exposure 1½ minutes. A 6½ x 8½ view camera was used. This would have been a very effective picture had a level or plumb line been used to get the focal plane in a vertical position. Squaring up is a prime essential in all architectural work. Sometimes this can be done by sighting along the back of the camera towards some line known to be vertical, such as a pillar or an angle of a wall.

G. A. Smith, who was among others sending in pinhole pictures, accompanied his contribution with the following letter:

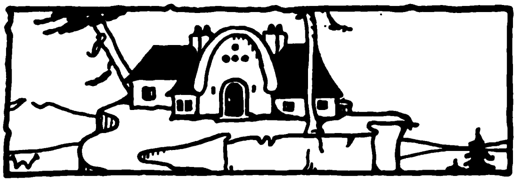
Don't you think you are somewhat unreasonable in asking that timid, bashful, and diffident individual, the amateur photographer, to take a hand camera and tripod and set it up in the public street, inviting the attention of numerous "rubbers" while he is making a pinhole exposure? In summer-time he could go to one of the parks, where his antics would possibly not attract so much attention. Nevertheless I send you a pinhole picture — the first I have ever made, but it won't be the last. A young man in the "United" gave me an empty cigar box. It measures 5⅜ x 5¾ x 6¾. I drilled an inch hole in the end, lined it with black paper, and put a couple of strips, hooks, etc., in one end. An unexposed 3¼ x 4¼ film from a Premo Film Pack put in an empty Agfa Film Pack container was my plate. The pinhole was made in the black paper with a No. 7 sewing needle, a flap to cover it. I wrapped the box in two folds of an old focusing cloth, set it on the window sill at 4 P. M. and took the picture of the houses in the rear. Exposure, 7 minutes. (Then follow other data).

"While you may think this is a punk picture, and I wouldn't blame you if you did, I think it is wonderful. It is exactly what I see. The perspective is correct, and would be no matter where I set the plate. No lens will do that, no matter how expensive. As to fuzziness, I have seen far worse made with soft-focus lenses. If the soft-focus workers would make their pictures always as sharp as this they would be all right, but they send in horrible things and win prizes with them too. (Pretty rough. — Sketch-Book Editor). Next summer (D. V.) I propose to make some pinhole pictures. I will get a Watkins pinhole and use one of my plate cameras. The only trouble is the long exposure. If the wind is blowing and the trees swaying you can't work. But architectural subjects and still life studies can always be made.

"To illustrate the sensitiveness of the amateur photographer, I will tell you a true story. I was taking a picture of the waterfall in the Bronx Park. I had my camera on a tripod. I had focused and was all ready to expose and was all alone — no "rubbers" around — when who should come walking towards me but a man, tall, middle-aged, slim and wiry. "Here comes a 'rubber'," I said to myself. I couldn't escape, and I commenced to feel nervous. But he paid no attention to me. He stood almost beside me and he kept looking at the falls. All of a sudden, he whipped a little vest-pocket out, sighted it, snapped it, stuck it back in his pocket, turned on his heel, and sneaked away as if he had committed a murder or done something awful. He certainly was suffering from "sensitivus photographicus severus." If I had known he was a fellow photographer I would have been glad to talk to him. We photographers when we meet talk like a lot of old

PINHOLE PICTURE NO. 2 C. UNDERWOOD

washerwomen, discussing cameras, lenses, etc., but we hate the curious-eyed. If we could only escape them, but their name is legion. They are all over. So many people now carry small film cameras that you are fairly safe with one of *them*, but take a plate camera and tripod and set it up and just see what happens. Even as you start out from the house you can feel them saying, "There he goes with his camera." It is very, very trying.



THE QUESTION BOX

WINNING ANSWER TO JANUARY QUESTION

For what subjects is a lens shade of special value in winter? State your experience with lens shades.

In winter when snow is on the ground, a lens shade is an indispensable part of the photographer's equipment, for in almost any subject he photographs, both indoors and outdoors, the lens calls for some protection against the intense reflection of the snow.

The subject which perhaps requires the lens shade mostly, is the snow-clad landscape, especially on bright days when the sun makes an intense glare on the snow. The lens receives the glare of the snow in the immediate foreground, and the result is generally a fogged plate. Hence this reflection must be stopped by a lens shade. Sometimes it is necessary to focus towards the sun, in order to get a certain effect or view, and in this case the double glare of the sun and snow demands the utmost and sometimes even more protection than a lens shade can give.

In taking a portrait or photographing any object under or near a window, the light from the snow again strikes the lens, but this time only on one side, consequently producing a partly fogged plate. By hanging a cloth over the window, very much light is lost, but by merely shading the lens, the same result may be obtained without such a loss of light.

The best shade for these subjects I find is made by cutting a piece of thin leather in such a shape that it can be folded into a frustum of a cone, the smaller end of which will fit over the lens loosely. The inside is covered with black paper, and the leather is fastened together by one of those paper clasps which work like a cotter pin. Some narrow elastic tape run around the smaller end will hold it snugly over the lens. The length of the shade, and the diameter of the larger end depend on the angle of view of the lens, for with wide-angle lenses care must be taken that the edge of the shade does not cut the plate. It is always best to test this by focusing with a dummy lens shade. With my lens of 6-inch focus on a 4 x 5 camera, I use a shade 2½ inches long, and 3 inches in diameter at the large end, made according to the preceding directions. — **WARWICK B. MILLER**, 400 Wayland Ave., Providence, R. I.

ANOTHER ANSWER

When the beginner in photography reads the directions accompanying his first camera, he reads that he must not point his camera toward the sun, that the latter should be behind him, perhaps a little to the right or left, but in a general direction from the back.

As he grows in knowledge, however, gained by experience, and by reading good books and magazines treating of photography in its various aspects, he finds that the light may come not only from the back and each side of the camera, but that in very many cases the most artistic and pictorial effects are secured by pointing the camera directly toward the light. Great care, however, must be taken, that the sun's rays do not shine directly into the lens, as that would probably cause veiling or fog in the negative, and it would be of but little use, as far as an artistic print was concerned.

In winter, when the ground is covered with snow and the sun is shining brilliantly, the light is very apt to be reflected into the lens, even though it is not

The composition of the print "There's Santa" is weak from lack of internal balance. Also there are too many vertical lines opposing but one strong horizontal. The triangular arrangement of the book and heads is good, although the central white splotch distracts the attention and the highlight on the right side of the book leads the eye out of the picture too soon. The lower edge of the child's dress catches the eye but leads it nowhere. This shows the lack of use of the most vivid line in the whole composition. By trimming down from the top, to the neck of the bell; in on the left, almost to the chair; and up from the bottom, to the tip of the dog's ear, the center of balance is shifted and heaviness avoided.

The tone quality of the child's face is good, but, in general, the contrasts are too harsh, a common fault with flashlight. As a result the mother's hands are very poorly rendered. Greater detail and soft gradations in the clothing would give aesthetic quality and produce a sense of the restfulness and the light innocence of the child.

If the picture is to be reconstructed, I would suggest placing the child with the mother leaning over her and in profile, a little to the right of the center and and facing left front. A tree in the left background gives internal balance and suggestion at the same time. The number of accessories should be limited. The woman's back and lights on the floor and tree can be made to give circular observation. A large stop will diffuse the background enough to give depth and subordinate the tree. Greater tonality might be obtained by more diffusion, full exposure, and a very soft paper. — Roger S. Estey.

This composition is very interesting but the technical details do not seem to have been well planned. The background is so light in tone that it detracts much from the principal objects of the picture. The light objects on the tree are another detriment. Except in the lower left-hand corner no detail is visible in the abysmal lower part of the picture and but little in the white garments.

The harshness of the tones suggests overdevelopment of the negative. If the photographer is sufficiently skillful he might try etching out the bright highlight over the little girl's head, also the light reflection across her hair. Afterward reduce the entire negative. The mother's hands are too dark and might well be brought out better. Also eliminate the shadow of the book. Then print on a soft paper and trim one inch from the bottom.

But before undertaking such radical treatment it would be well to make a number of prints from the negative as it is — Ralph Beebe.

NEW CRITICISM PRINT NO. 28

Readers' Criticism Print No. 28 — "The Whole Family," by A. Palme — is different in character from pictures previously submitted to the mercies of the anvil chorus. It should be provocative of thought. For the best criticism received by May 15 a credit of $2.00 towards books of our publication will be awarded. Address the Readers' Criticism Editor, and write on one side of the paper only.

* * *

Among the exhibitions of photographs scheduled at the Society of Arts and Crafts, 9 Park Street, Boston 9, Mass., are the work submitted for the Post Card Competition, from March 20th to Apr. 1st, photographs by Raymond E. Hanson, Ralph Osborne and Herbert B. Turner from May 3 to 16 and photographs by Francis O. Libby, F.R.P.S., from June 2 to 14. The Photographers Guild will hold their exhibition from September 21 to October 4.

OUR COMPETITIONS

SENIOR COMPETITION

The first prize in the February competition was awarded to "A February Portrait," by Harry Edward Horrigan. In choice of subject, in treatment, and especially in accurate rendering of tone values to give that elusive something known as quality, this portrait is a noteworthy piece of work. Made with an 8 x 10 Century camera equipped with a Wollensak Series A portrait lens of which only the front combination was used. This gives a focal length of 20 inches, which helps materially in producing proper perspective of the head. The exposure was 1 second in bright light at f:7 at noon in February. The Seed 30 plate was developed in pyro-soda and printed on Artura Iris Grade C. Page 239.

The second prize was awarded to Walter E. Owen for his print "Viola," made in the studio of the Department of Photography of the Brooklyn Academy of Arts and Sciences. While the lighting on the upper portion of this picture is excellent, it seems to us that the lower portion is a trifle too heavy and that a somewhat lighter rendering would have helped. Made with an 8 x 10 Eastman view camera fitted with a Wollensak lens of 14 inches' focal length. The exposure at 4 P. M. in January, in poor light with the assistance of a 200-watt lamp, was 8 seconds at f:5. The Standard Orthonon plate was developed in Azol and printed on Wellington Extra Rough Cream Crayon Bromide. Page 243.

The third prize was awarded to Eleanor L. Smith for "The White House Among the Trees," made at the base of the Palisades opposite New York. This is a very beautiful piece of tone rendering combined with pleasing composition and a fine sense of decoration. Made with a 6½ x 8½ view camera fitted with a 16-inch Smith series 1 lens. The exposure in bright light at 11.30 A. M. in March was 3 seconds at f:6 with a 3-times filter. The Seed Orthonon plate was developed in Rodinal and printed on platinum. Page 241.

Honorable Mentions were awarded as follows:

Good Cheer Within	Edwin B. Collins
A Portrait	J. H. Field
Making the Last Curve	Geo. W. French
Fire!	Geo. Miller, Jr.
Fall is Here	H. B. Neal
Temple of Quetzacoatl	Juventino Ocampo
High Bridge	Lilian E. Redmayne

Commendations were awarded as follows:

The Village	Harry Beeler, Jr.
Surf Study	Walter L. Bogert
Christmas Stories	F. E. Bronson
The Graduate	Fred E. Crum
Woodland Reflections	John N. Consdorf
Sunset	Licdo. Carlos F. de Moya
On the Right Side of the Fence	Louis A. Dyar
On the Hill	Walter H. Ganaway
A Still Morning on the Lake	Wm. Hodges
The White Mantle of Winter	Jiro Ito

Uncle Dick	E. E. Jones
The Creek and Snow	W. Kitchen
The Pine Bough	Dr. E. L. C. McGinnis
Agnes	Salome E. Marckwardt
Nell	Geo. Meehan
On the Kennebec River	J. R. Meservey
A Summer Idyll	Lyle A. Morse
Thro' Drifting Snow	Frank R. Nivison
When a Feller Needs a Friend	F. A. Northrup
The Desert Sentinel	Gregory L. Oliver
Snow-Bound Harvest	Guy E. Osborne
Winter Clouds	Arthur Palme
Summer Dawn	Walter Rutherford
At a London Fountain	J. Herbert Saunders
The Path of Silver	J. A. Singler
Chapel Pond	Kenneth D. Smith
Enchantment	E. V. Wenzell
In Ballast	B. M. Whitlock
The Scraggly Pine Tree	Wm. J. Wilson
Winter Birches	Oliver P. Young

JUNIOR COMPETITION

The first prize in the Junior Competition was awarded to A. M. Odell for "Winter Evening," made near Sherbrooke, Quebec. This is remarkable not only for the quality of the snow but for the very effective lighting and the way in which this helps to separate the planes. The progression of stately elms from the far distance to the immediate foreground is handled remarkably well in all its space relations. Made with a 3¼ x 4¼ Ansco camera with an Ansco anastigmat of 4⅞ inches focus. The exposure in sunlight, at 4 P. M. in January, was 1-25 second at *f*:11. The Eastman film was developed in pyro-soda and enlarged on P. M. C. No. 9 with a No. 2 diffuser and an Eastman projection machine. Page 240.

The second prize was given to Walter P. Bruning for "The White Farmhouse." This is another picture in which the perspective, both linear and aerial, is excellently handled. The light and shadow in the foreground, the winding road and the fence, carry our eye back very interestingly to the house in the distance. The picture is full of interest and the two principal spots are tied together very well. We would like to see a portion of the light streak across the foreground toned down. Made with a 3¼x4¼ R. B. Auto Graflex equipped with a 7¼ inch Wollensak Verito. The exposure was 1-15 second at *f*:4 in bright light at 10 A. M. in August. The Premo Film Pack was developed in M. Q. and printed on Artura Carbon Black D. Page 245.

Honorable Mentions were awarded as follows:

Storm Impending	Ralph B. Bonwit
November Woods	Marjorie Chater
Idols of the Gummist	Robt. E. DeLand
Morning Light	Alvin L. Fischer
Watching	Geo. P. Hales
Evening Shadows	John Janson
In Winter's Grip	J. W. Jeffers

Commendations were awarded as follows:

Johnny Tousle Head	Wm. E. Barr
The Obstacle Race	Chas. Barrows
When Shadows are Long	H. J. Brennan
Urban Idyl	Dr. Miles J. Breuer
Snow Covered	Harold Brown
Spring Brook	E. M. Bruce
The Sylvan Pool	Franklin Chapman
A Snowy Day	John A. Craft
Olden Times	Richard H. Crawford
Steps and Columns	Elvy G. Didero
Minnehaha Falls	W. E. Donahue
The Nightcap	Joseph A. Evangelista
Winter	E. Max Finley
Cannon Falls Dam	A. T. Flikke
Gladys	Clinton E. Ford
Winter Shadows	Herbert Freese
A Day in June	Jas. R. Frow
Spring	O. H. Fuller
Fireworks	R. W. Garwood
Bronx River Falls in Winter	William H. Harting
The Thatched Roof	Ralph S. Hayes
Municipal Group	Thomas C. Higgins
The Amateur	Hubert Hill
A Pout	Mrs. C. H. Johnston
Portrait	Wm. Jonnes
The Frozen Brook	Harold R. Kallenberg
Babes in the Woods	Adolphe Lebourg
Light and Shade	Jas. S. Loomis
Canal — San Fernando	Bradford Massey
Pier, Bass Point	Miss L. F. Newton
Sun-Kissed Brook	T. O'Hara
The Pasture	Hugh Palmer
Winter Evening in the Park	O. Peetz
Part of the Sport	W. H. Pote
Midwinter	Talbot Richardson
Sauce Lloron	Ignacio V. Rodriguez
The Waiting Boat	Howard K. Rowe
California Landscape	Geo. E. Schrimsher
Cora	Benj. Sellars
The First Birthday	Dan. O. Smith
Trying his Teeth	F. A. Tryon
Dolly	Alfred S. Upton
Fort Rambler	Carl J. Wagner
An Adirondack Scene	Wm. J. Warnecke
Scene in Park	John B. Ziemanski

ROLL OF HONOR

FIRST PRIZE

J. H. Field 8

SECOND PRIZE

Geo. W. French 8
H. B. Rudolph 7
Alexander Murray 6
Kenneth D. Smith 6

THIRD PRIZE

J. Herbert Saunders 8
F. D. Burt 6
Jared Gardner 6
Wm. J. Wilson 6
Lyle A. Morse 5

HONORABLE MENTION, SENIOR CLASS

Louis A. Dyar 11
Gustav Glueckert 11
W. Kitchen 10
Sotaro Saba 10
Fred E. Crum 9
Edwin B. Collins 8
Herbert J. Harper 8
Juventino Ocampo 7
Clark H. Rutter 9
Oliver P. Young 6
Louis R. Murray 5
F. A. Northrup 5
Robert P. Nute 5
Walter Rutherford 5
James Thomson 5
Elizabeth B. Wotkyns 5
Walter L. Bogert 5

COMMENDATION SENIOR CLASS

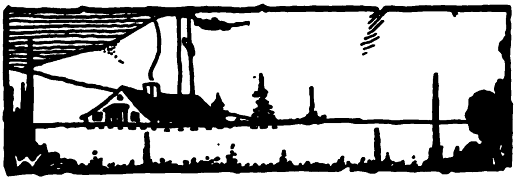
Chas. D. Meservey 21
Walter R. Henry 15
Carlos F. DeMoya 13
Dr. E. L. C. McGinnis 12
Arthur Palme 12
Gus Schinkel 11
J. A. Singler 11
C. M. Harris 10
Frank R. Nivison 10
F. E. Bronson 9
J. K. Hodges 9
E. E. Jones 9
Frank King 9
Leo Kraft 9
H. B. Neal 9
E. W. Quigley 9
Herman D. Warren 9
B. M. Whitlock 9
H. K. Armura 8
Stephen J. Bushya 6
John N. Consdorf 6
Wm. S. Davis 6
Victor D. Elmere 6
R. M. Hart 6
Geo. Miller, Jr. 6
Dr. L. Broe 5
M. L. Shattuck 5
Arthur H. Travers 5

HONORABLE MENTION, JUNIOR CLASS

H. Bowly 5
J. Ito 5
J. W. Jeffers 5
Joseph F. Westgate 5

COMMENDATION, JUNIOR CLASS

John Ziemanski 22
F. H. Chant 21
W. Keibel 21
Garnet E. Jacques 18
Edward H. Smith 17
Howard E. Louis 16
Paul Richardson 15
P. F. Squier 14
L. Archambault 13
H. J. Brennan 13
Talbot Richardson 13
Howard K. Rowe 13
Wm. E. Barr 12
J. F. Webster 12
W. W. Kuntz 11
John Paton, Jr. 11
Alfred S. Upton 11
P. A. Cazaubon 10
Stephen E. Isaac 10
Wm. F. Lowe 10
H. J. Mahlenbrock 10
M. W. Osterweis 10
Ivan Sokoloff 10
Marjorie Chater 9
John A. Elkins 9
J. R. Frow 9
Simon Jochemowitz 9
B. F. Willard 9
A. S. Workman 9
Robert E. DeLand 8
Chester Demaree 8
Jas. V. Dunham 8
Edwin A. Falk 8
John P. Geertz 8
Geo. S. Matthews 8
G. A. Smith 8
R. W. Garwood 8
John H. D. Blanke 7
Walter P. Bruning 7
A. T. Flikke 7
William H. Harting 7
C. V. Hewitt 7
Thomas C. Higgins 7
I. Komaniya 7
Rex G. Mattice 7
Stephen J. Palickar 7
E. J. Williams 7
Harry Beeler, Jr. 6
John Janson 6
Wm. T. McGrath 6
Hannah G. Myrick, M.D. 6
Dr. C. W. Pratt 6
Mary E. Benham 5
E. J. Browne 5
R. E. Cask 5
J. L. Clyburn 5
Herbert L. Douglas 5
Geo. L. Heath 5
Mrs. C. H. Johnston 5
Harry G. Pearce 5
Edwin A. Roberts 5
Ford E. Samuel 5
A. M. Tomlinson 5
R. D. Wilson 5



NOTES AND NEWS

The Royal Photographic Society of Great Britain are holding their sixty-seventh annual exhibition in September and October of this year. This is the most representative exhibition of photographic work in the world and the section sent by American scientific men heretofore has demonstrated the high position held by this country in applied photography. It is very desirable that American scientific photography should be equally well represented in 1922 and in order to enable this to be done with as little difficulty as possible Mr. T. J. Newton of Eastman Kodak Company, Rochester, N. Y, has arranged to collect and forward American work intended for the scientific section. This work should consist of prints showing the use of photography for scientific purposes and its application to spectroscopy, astronomy, radiography, biology, etc. Photographs must reach Mr. Newton not later than Thursday, June 15th. They should be mounted but not framed. Mr. Newton would be glad to hear from any worker who can send such work and he will be glad to arrange for the receiving and entry of the exhibit.

* * *

The American Legion News Service wants to present Legion news to the world by means of photographs. They pay from one dollar to ten dollars for pictures and the kind of pictures they want are: news pictures of interest to Legion men generally; news pictures of unusual Legion men or of unusual Legion activity; feature pictures with Legion angle; wives, daughters and sweethearts — emphasis on the good looking ones — of Legion men. With the pictures should be a brief underline giving facts, just enough to enable the editor to do the writing. Check will be sent immediately for each photograph that is accepted and those that are not used will be returned at once and in good shape.

The addresses of the American Legion News Service are: 627 West 43rd Street, New York City; Meridan Life Building, Indianapolis, Ind; 534 Woodward Building, Washington, D. C.

* * *

Among the bulletins that have come to us are "The Ground Glass," published by the Newark Camera Club, The Elysian Camera Club Bulletin and a bulletin from the Toronto Camera Club. The Newark C. C. members most decidedly have "something to crow about"; the chairman of the Building Committee, Mr. Julius F. Graether, reports: "On Tuesday, January 3, 1922, title to *OUR OWN HOME* at 27 Franklin Street passed into our hands. In less than three months we have accomplished that which has always been far beyond our fondest hopes and have realized an ambition of which no other camera club can boast." That, surely, is something to be proud of and we wish the club continued success in all its enterprises.

The Board of Managers of the Elysian Camera Club of Hoboken, N. J., report that during the past year there has been a very gratifying revival of interest in the affairs of the club; there has been a decided improvement in the photographic work and the membership has increased by nearly forty per cent.

Among the events scheduled by the Toronto Camera Club are a talk by Dr. C. E. K. Mees on "Photography through the Microscope," a talk on "Colloids in Photography" by Dr. E. F. Burton, Physics Department, University of Toronto, and a demonstration of print making by Mr. W. A. Rockwood.

FORTHCOMING EXHIBITIONS

Place	Date	For information write to—
Pictorial Photographic Society of San Francisco, 1st Annual Salon of Photography	May, 1922	H. A. Hussey, Salon Sec. 64 Pine Street, San Francisco, California
Tenth Annual Exhibition by the Bangor Society of Art.	May 1st to May 20th, 1922	Bangor Society of Art Bangor, Maine

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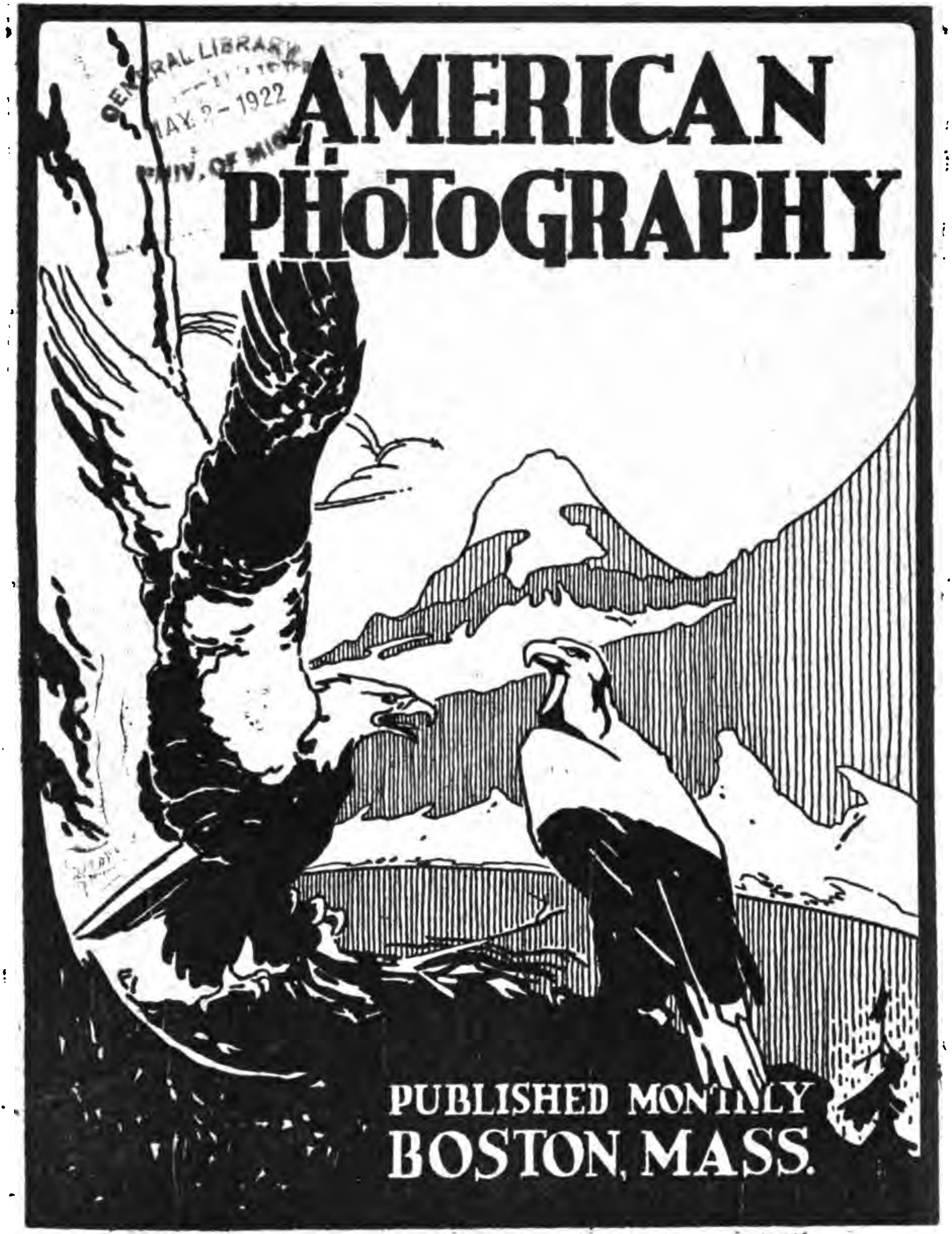

PUBLISHED MONTHLY
BOSTON, MASS.

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Edited by

FRANK R. FRAPRIE, S. M., F. R. P. S.

Editor of American Photography

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AMERICAN
PHOTOGRAPHY

VOL. XVI BOSTON, MASS., MAY, 1922 No. 5

THE NINTH PITTSBURGH SALON

FRANK ROY FRAPRIE

AS USUAL, the Ninth Annual Pittsburgh Salon of Photography, held under the auspices of the Photographic Section of the Academy of Science and Art of Pittsburgh in Gallery M of the Carnegie Institute, was opened with an informal press view on the evening of March 1 and was scheduled to remain open during the entire month. The general aspect of the hanging was as in previous years, the prints being arranged under glass about the walls of two large rooms. While the arrangement is rather monotonous at a general glance, it is very advantageous for the inspection of single pictures, as they are hung at a convenient height and well spaced.

The general impression received from the exhibition is that there has been no especial advance in the direction of originality within the last year or two. There are few prints which are so much stronger than their fellows or the work of previous years as to excite instant remark but, a much more important point, there is hardly a print on the walls which is conspicuously weak or bad and the general average is higher than in many previous years. There seemed to be more exhibitors this year than ever before who have an adequate conception of what an exhibition print should be and produce one or more prints which are well above the required minimum standard.

It would appear to be true that the cardinal fault among the photographers exhibiting in the United States is a lack of prolonged and minute observation, with the view to deciding what is the most effective aspect or most characteristic rendering of a subject, and the subsequent patient waiting necessary to seize the all-important moment at the rare instant when it occurs. It may almost be taken as axiomatic that there is only one aspect and lighting of a landscape which gives the maximum pictorial effect, and this may occur but rarely in the course of years. The photographic artist must therefore be prepared for this moment by knowing what are the conditions under which it will occur and by having the apparatus ready to seize it. His task is more difficult than that of the painter, because he can add little from his imagination. Of such happy and all-important moments we find but few transcripts in the present exhibition. The average landscape photographer makes his negative at the moment which is most convenient and endeavors to add an effect of lighting, whether of contrast or of mystery, by subsequent manipulation. He usually and happily fails. Those who would succeed in future salons and see their work stand forth from that of their competitors must devote more attention to this careful and prolonged observation and final seizure of the moment determined upon by the preliminary study.

The difficulties of portraiture are small by comparison with those of landscape photography. The sitter and the lighting are both flexible to the photographer's will, and consequently the making of a photographic portrait of high quality is rather the result of careful technical work than of the inspiration of a happy moment. Therefore we find many good portraits in this salon and some which reach a standard far above the average.

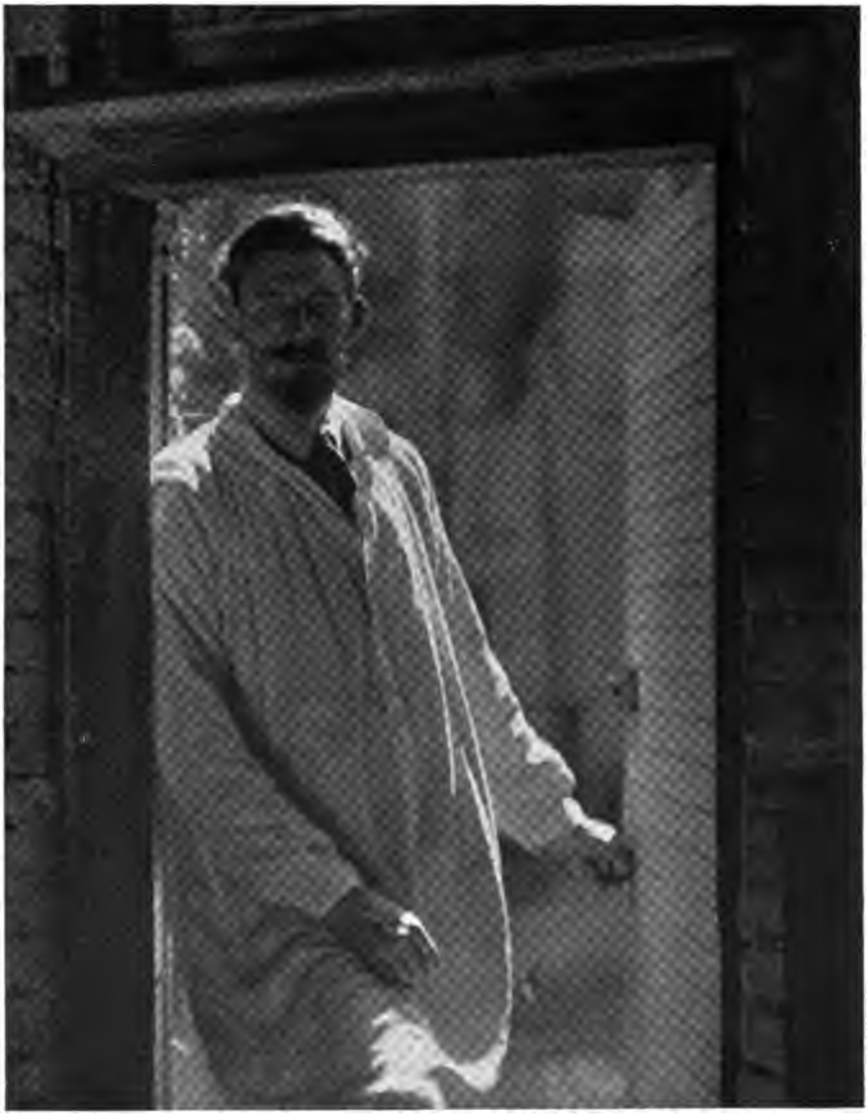
It may here be remarked that the exhibition is numerically strong in still lifes, a department which our amateurs seem to have taken up enthusiastically within the last year or two. Few of them have much pictorial merit. The arrangements, as a rule, are not sufficiently studied or far too much studied; in other words, the maker has either photographed small familiar objects of household decoration without well considering the placing and lighting, or has deliberately assembled grotesque lines and shapes in a relationship as bizarre as possible. Some of the latter type are interesting as examples of pure pattern or as line arrangements, but have little photographic value.

It would be impossible in our space to give detailed criticism of all the work exhibited, but we may briefly mention some of the outstanding pictures and workers. William A. Alcock is at his best in "Reflection from the Tree of Light," an interior showing an interesting arrangement of lights reflected from the glittering surfaces of several highly polished pillars. "Poor Old Pell" is a masterly portrait of a subject which will repel more people than it attracts — a leering idiot.

John Allen has a fine winter landscape. "The House on the River" by P. Douglas Anderson is a pleasing arrangement of curves. Charles K. Archer is represented by six landscapes of pleasing composition, "Cheat River — West Virginia" being a rendering of an especially picturesque subject. Fred R. Archer of Los Angeles shows an Oriental street scene, "Abu al-Saadat," which, presumably of "movie" origin, is a very interesting replica of the real thing. Alfred H. Bemis has produced a very mysterious effect, as mysteriously entitled "Ego"; a fairy-like figure is placed in a world of curious curves and spirals in the midst of a most fantastic vegetation. The mundane origin of this is certified to by a competent botanist, but the average observer is likely to find the composition rather weird.

A. T. Blackburn shows the famous house of the Prime Minister of England, "No. 10 Downing Street," and makes of its doorway a pleasing architectural frame for a figure. J. D. Boyer, in "The Mountain," offers a lovely spring composition of trees outlined against an interesting background of hills and sky. W. O. Breckon has produced a strong and virile portrait of Dr. Holland, a personage well known to his fellow citizens of Pittsburgh. Alfred Brinkler of Portland is best represented by "The Golden Pathway," sufficiently commented upon in our previous issue. Ralph G. Cahn shows a pleasing still life of a statuette and books, entitled "Design for a Bookplate." Dr. A. D. Chaffee has produced a well considered series of six foreign views, all of which are interesting and one of which, "Uzerches: 'Il fait un beau soleil,' " is lovely both in its selection of subject and its execution. Guy Gayler Clark, in his "On the Merry-go-round," has produced a piece of work which is highly original and extremely decorative, while "Dragon Shadows" may be characterized as curious. "Allegheny River — Sunset," by Clare J. Crary, is a pleasing landscape. "Evening," by James N. Doolittle, attracted much attention. It represents a draped figure carrying a globe of light under the arm. Our opinion is that the light is far too strong for the balance of the print.

"Portrait of Miss F.," by Richard T. Dooner, is a fine portrait, a lovely head well



PORTRAIT OF GARDNER HALE

G. W. HARTING, NEW YORK

Pittsburgh Salon, 1922

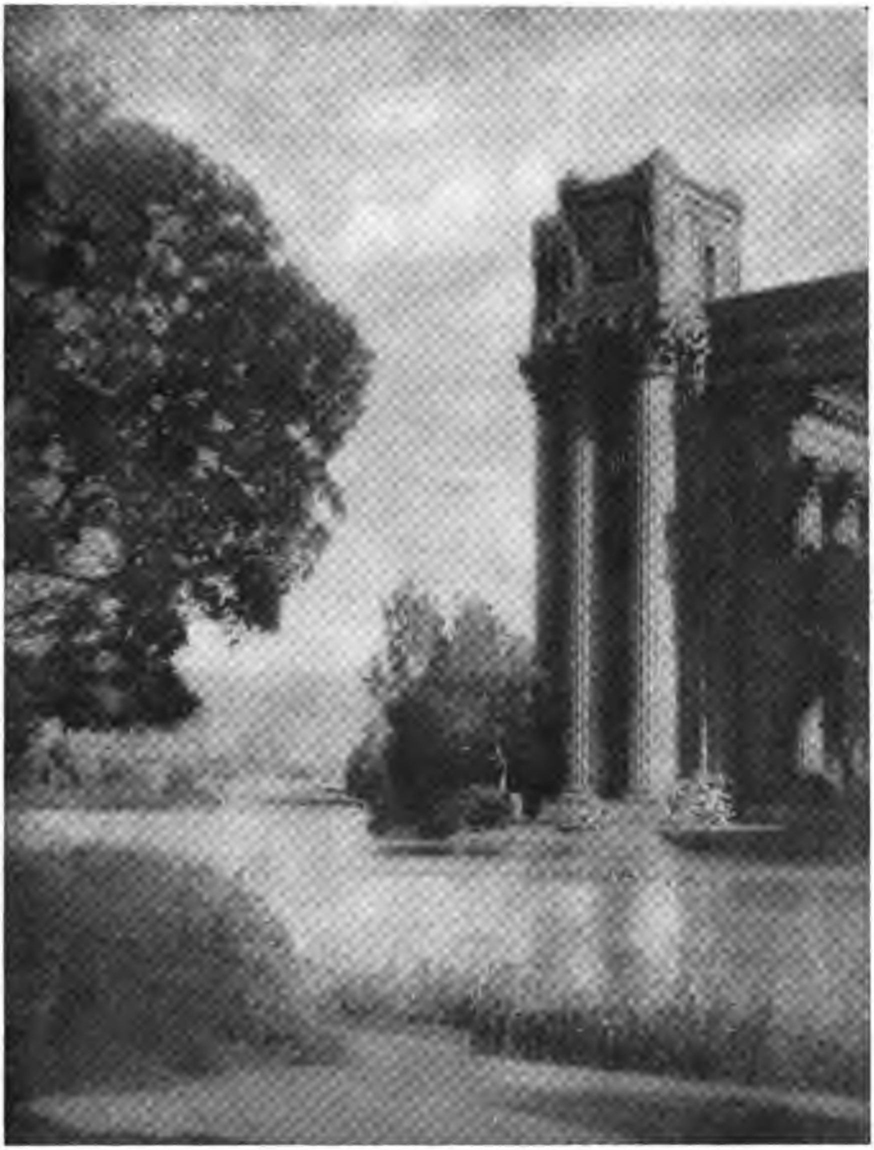
rendered in bromoil. The best of F. M. Doudna's four prints is "Along the Canal," a very nice marine study. His still lifes, though technically good, are quite empty of thought. Jerry D. Drew is distinguished by No. 67, "Evening," a beautiful marine study of the East River. Mrs. Drew has three studies of children showing attractive subjects, sympathetic treatment, pleasing composition, and perfect technique. Dr. C. A. Eaton of Boston shows what is probably the best snow scene in the salon in his print "Looking Backward," which was also mentioned in the review of our own competition. John Paul Edwards' best print is "In Bound from the Carribean," but one feels that his collection of five prints falls below his previous standards, on the whole. Don Fitts, in "Ephemera," shows one of the most curious prints within our memory — a series of splashes of dark and light of the utmost incoherence, which are provisionally identified as highly enlarged and granular shadows cast on the surface of snow. Louis Fleckenstein is best represented by "Reflections," a very original decoration showing a fine figure against a background pleasingly broken by an ellipse of light.

Frederick F. Frittita shows a very strong head entitled "Gallia Linton, Fisherman" and "Kyra," a fine and gracefully posed figure study. Louis A. Goetz continues to exhibit nudes, the most pleasing being "A Tapestry Design," which shows a graceful figure in a path through the woods. "The Des Plaines Trail," by E. E. Gray, is a charming landscape. Johan Hagemeyer is extremely modern, perhaps morbid, in his tendencies, showing a horridly ugly head called "Decay" and a strained and distorted still life of a sphinx straining towards its mate, called "L'Affinité." The trouble with things of this type in photography is that they seem so painfully thought out and worked for that they lose the spontaneity which we may assume to exist in an artist's hurried drawing.

Forman Hanna shows "Deserted," which seems to be a back view of the log cabin which he has frequently and successfully used in other pictures. His other prints, though interesting in subject, seemed too flat and low in tone. "Low Tide," by G. H. S. Harding, is a beach landscape on a grand scale, showing a great stretch of sand with a tiny cavalcade rushing along in the distance. G. W. Harting shows three strong pieces of work, the finest being his "Portrait of Gardner Hale," strongly placed against the light in a doorway. "The Circus Comes to Town," by Thomas R. Hartley, is a pleasant presentation of a novel and interesting subject, the tented field of the circus seen from an elevation. Emily H. Hayden shows three prints in her usual delicate and pleasing style.

Dr. Charles H. Jaeger is represented by six tiny prints of foreign scenes, all of which are pleasing, but none of which rise to great heights of inspiration. Walter C. and Thomas M. Jarrett of Pittsburgh excel in child portraits, No. 134, "Portrait of Child," being a very direct presentation of a startled youngster. H. A. Jeltch of New York is a new worker in bromoil whose technique is excellent, though the subjects are somewhat commonplace. "Miss Elsie," by R. W. Johnston, is a fine portrait of a lovely child, beautifully placed in the picture space, and of subtle and pleasing quality. Of Myers R. Jones' three foreign subjects, "Kissing the Padre's Hand" is the most pleasing in quality and human interest.

Arthur F. Kales, as in previous years, shows one of the strongest collections, having the full quota of six pictures accepted. Three of these are among the outstanding triumphs of the salon — two portraits of "Marguerite De La Motte," a lovely, tall and stately woman admirably presented, and "Red Feather," a charming composition of a nude Indian stretched out on a granite ledge and drinking from a quiet stream. T. W. Kilmer shows a strong "Profile of an Indian" and a noble vision of the "Cathedral of St. John the Divine." Sophie L. Lauffer shows four prints, of which "At the Tepee" is very good and "Mrs. McKibben" very strong work, though an unpleasant subject. "The Bridge,"



A TEMPLE ON THE PACIFIC COAST

J. PETROCELLI

Pittsburgh Salon, 1922

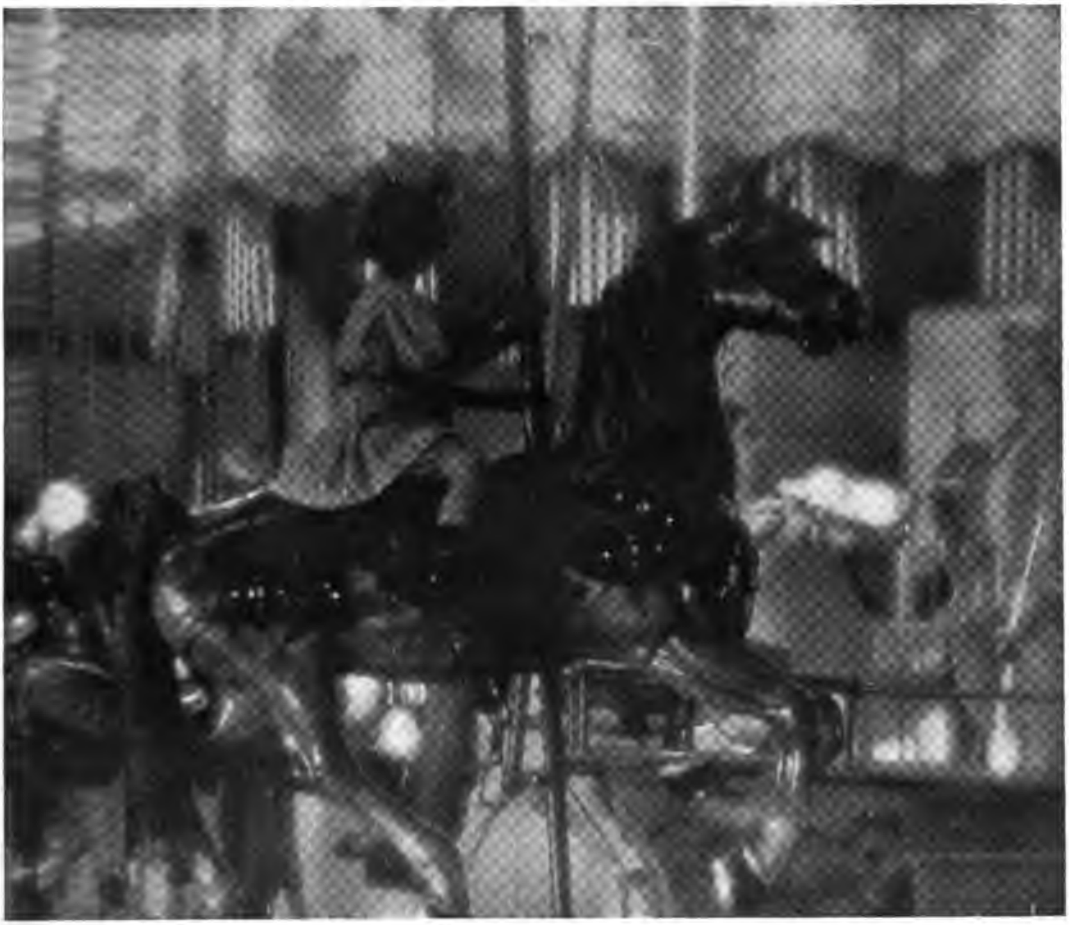
by Charles Lederle, is original in its treatment. Looking across a river bed, the double row of massive pillars of a great viaduct with the variously slanted lines of the architecture, makes an unusual composition.

"The Pool in the Patio," by Rollin C. Lewis, is a very pleasing piece of work, the ellipse of the basin being finely placed in the picture space. Francis Orville Libby and Dr. Rupert S. Lovejoy continue to produce their large gum prints profusely, each being again represented by six pictures. Libby's "The Lake Below the Hill" is a lovely decoration and the "Day's End" shows wonderful clouds, though the figures introduced in the foreground are not so happy. Both of these workers, in fact, are introducing tiny figures into their landscapes, but the illusion is not perfect enough. You remain in doubt as to whether they are endeavoring to show human beings amid crags of the grandeur of those to which Doré was so partial, or whether they are trying to introduce us into the world of faery. Lovejoy's "Ulysses and the Sirens" suggests the first, while "Nocturne — Fairyland" gives us the second alternative; the treatment, however, is practically the same in both prints. We think these talented workers will find a better scope for their activities in the rugged strength of the northern peaks than in excursions into fairyland, for which photography seems rather ill suited.

"Laureanie," by Holmes I. Mettee, is an unusual piece of portraiture, flat in treatment but lovely in pose. "Truants," by N. P. Moerdyke, shows the eternal fascination of the sea for youth, a couple of wistful little fellows on the corner of a dock looking across to the hull of the vessel which spells romance to them. Nickolas Muray shows an excellent male torso and an interesting portrait of "Desha." Percy Neymann shows us four dramatic characters — Louis XI, a very strong characterization, Fagin, Gaspard, and Richard III. They are all rather theatrical, but show undoubted strength and a promise of more and stronger work to come. "An Opening in the Vines," by John Perring, is a very picturesque decoration of foliage with a spider hanging in the centre as the principal motive. Joseph Petrocelli exhibits three excellent prints, "The Curb Market — New York," awarded a prize in our own competition, and "A Temple on the Pacific Coast," both being very strong pieces of work. The best of Ernest M. Pratt's five prints are "Morning Light," a beautiful atmospheric study, and "The City from the Hill-top." Jane Reece has acquired a new style, evidently from a study of the Californian work, and her "Interior" is a very charming achievement of this type.

Aage Remfeldt of Norway, one of the few foreign exhibitors, has two excellent portraits. Peter J. Schweickart has enlarged "The Old Homestead" from an excellent negative, but has introduced rather too much granularity. From the fact that his intermediate negative was of paper, the result somewhat simulates gum, but doubtless a more direct process would have been fully as pictorial. Thomas O. Sheckell has two very pleasing prints, one of which received an award in our own competition last year and another this year. "Ivy and Old Glass," by Clara E. Sipprell, is a very beautiful still life composition. Eleanor Louise Smith has an excellent example of the screen type of composition, a hedge of eucalyptus trees well arranged before a landscape, and a lovely head entitled "Peace."

Flower pictures are scarce, but "Wild Rose," by W. H. Stephens, is a beautiful composition well worthy of its place on the wall. Ford Sterling has five fine portraits and figure studies, the outstanding one being "Thelma" because of its brilliant green color, which draws especial attention to the pretty face. Karl Struss is best represented by an excellent portrait entitled "Julia Faye." H. Y. Summons, an Englishman, naturally shows foreign scenes, but the attractiveness of the picturesque subjects is enhanced by the excellent treatment in gum. The comical side of life evidently appeals to Doris Ulmann,



ON THE MERRY-GO-ROUND
GUY GAYLER CLARK
Pittsburgh Salon, 1922

for both of her prints show amusing subjects well presented. "June," by Julia Miller Walbridge, is a very pleasing group of girls well arranged in an arch. Delight Weston has very pleasing technique and a nice choice of subject. Her "Architectural Study" portrays very interestingly the blank spaces of the chimney end of a well designed modern house.

Cornelia F. White works in a similar style, delicate treatment of rather commonplace subjects. "Wild Buckwheat and Sedges" by Ernest Williams has a very interesting and unusual foreground. This was the first print to be sold on the opening day. Otis Williams has two beautiful prints. "Morning Glory" represents a group of boys in a sunny glade, sympathetically rendered through a beautiful hazy atmosphere; "Allegro" portrays a nude figure running along an open beach trailing fathoms of fucus seaweed along behind. William H. Zerbe shows a wonderful piece of action in "Smoke Eaters," a group of firemen in vigorous endeavor, half seen through clouds of smoke. This picture has been accepted and well hung at every exhibition to which it has gone. The catalogue closes with W. W. Zieg's six pictures, which are all of a high order of merit, "The Afternoon Paper," a farmer reading on his porch, being beautifully constructed and lighted.

Many as are the pictures which we have mentioned, we have by no means listed all that are worthy of careful study and strong commendation. Limitations of space alone have prevented our giving much more space to individual pictures and briefly mentioning many to which we have not referred at all.

REGARDING FRANK ROY FRAPRIE

For Publication in His Own Magazine

JOHN WALLACE GILLIES

AS I figured it, this man came into my studio one day to tell me nothing. I happened at the time to have a lens which I thought better than any I had ever seen before, a Graf Variable and was messing with it on the camera. So lacking other victims to test the lens on, I made said Fraprie sit down in the chair and took two negatives of him. One was as good as the other, and as a matter of course I made some prints of one of them, which is herewith produced.

Friend Fraprie likes the picture. That was luck. He also likes the quality in the picture. That was the lens.

I am supposed to say something about said Fraprie. As you all might know he is the publisher of this magazine, and charges the highest advertising rate of any photographic periodical. I do not know yet whether this is because he is grasping, or because the magazine delivers the highest number of inquiries regarding the product. It would not be nice in either case. This scribble is not advertising, and Mr. Fraprie is not charging himself anything for it. You will see that it is not before I get done with him.

To begin with, said Fraprie would not win any beauty prize. That shows that there is a lot of art in the taking of a picture; hence the cut opposite. He is very mental, but likes pork chops well enough to be healthy. He is very energetic, but you would never know it to look at him. You have seen many such men in the front row of musical

FRANK ROY FRAPRIE
JOHN WALLACE GILLIES

comedies with half closed eyes apparently looking at nothing but counting carefully so they would be able to explain to the doorman later on which was the blond four from the left end. I do not say he would do this, but merely mention that in the quiet wa yhe has, there is a lot going on.

In a quiet sort of way Mr. Fraprie is doing much for photography. He is responsible for making more amateurs interested than you could count on all the fingers and toes of all your friends, and that is many. He is writing twenty-three books; I did not say good books, just books. How could a man at one time write twenty-three good books? But I'll venture to say after all that most of them will be good books, for he is very careful about what he does.

Mr. Fraprie started to make photographs about 3 B. C. but was interrupted by the Roman invasion. The work was then suspended until about the time of the great cathedrals, and then was upset again by the small wars in western Europe. Then he really got going about 1882, and has not let up since, to the eternal good of all amateurs, and some professionals who had sense enough not to lose their amateur viewpoint.

The F. R. P. S. does not mean anything much. Friend Fraprie is beyond mere letters. It is supposed to mean Fellow of the Royal Photographic Society, but again as I said, Fraprie is better than that. The English are a great bunch to tack letters on behind their names, like Ford trailers; most of them meaning nothing to the average man except to mystify him. Anyway that's what the F. R. P. S. is good for, although I understand that you have to do something definitely good for photography, or at least say that you did, in order to have the right to tack the letters on the end as he does. Feels like the tail of a kite to me, and diminishes speed somewhat; otherwise all right.

Anyway, in spite of all I have said against him Fraprie is one of the Fathers of photography, and is to be credited with much. He has been my good friend and has seen me buy my first Kodak and work until I got to where I really could make a good picture. Photography needs men like that to keep it going uphill.

THE COMPANIONSHIP OF THE CAMERA ALL THE YEAR ROUND

WM. J. WILSON

SINCE the great world of out-of-doors is needed, it has been graciously given to the human race. Were our outdoor world one continuous stretch of homes, churches, theatres, factories, schools, etc., most of us would be miserable and discontented.

When we hear the call of the hills and mountains, valleys and plains, brooks and rivers, bays and oceans, trees and flowers, blue sky and clouds, all the beckonings of the out-of-doors, gladly respond to the many invitations of nature in all her moods, enter heartily into the spirit of nature, then life takes on richer meanings, we clothe our beings in beautiful garments of appreciation, our minds and bodies are renewed with vigor for the tasks of the coming days.

For varied reasons we do not all get outdoors. Many delight to go, others go from a sense of duty or as a habit, some are dragged there by insistent friends. There are those who will not go, and there is the end of it. Companionship has much to do with our real

EGO

ALFRED H. BEMIS

Pittsburgh Salon, 1922

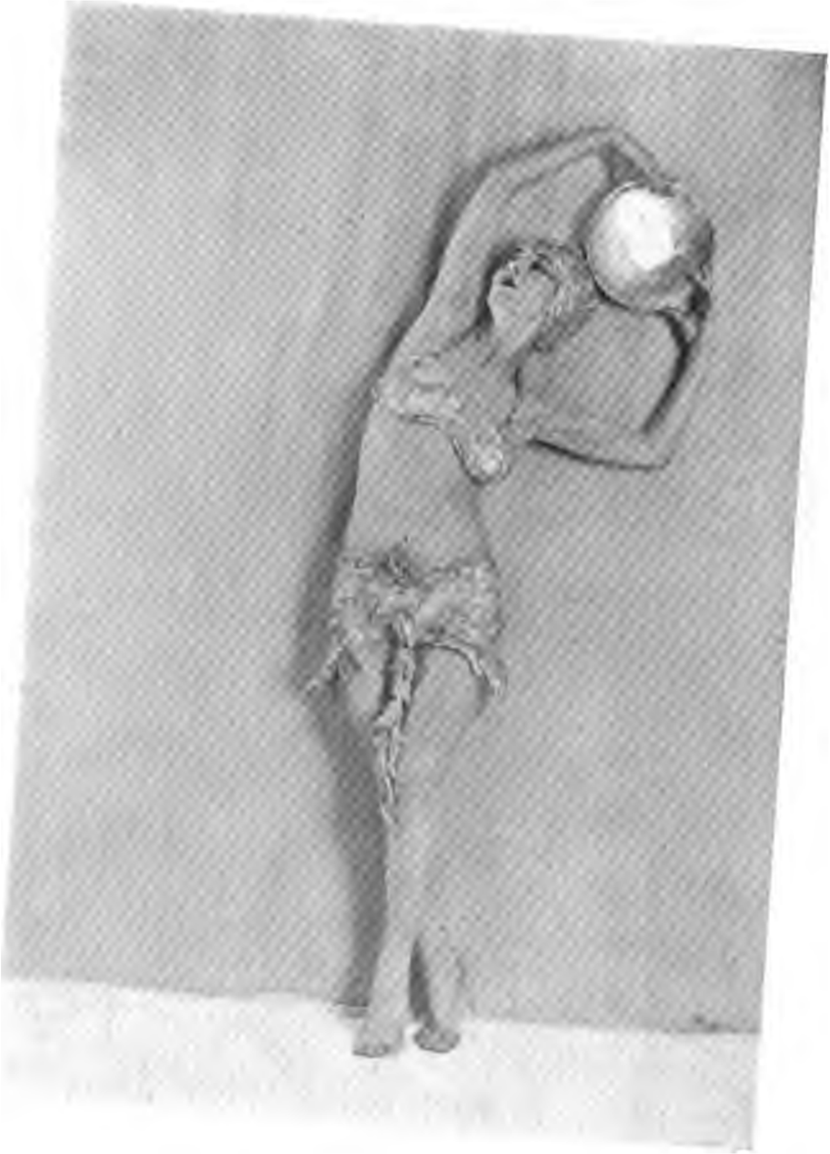
intense enjoyment of nature. If a good companion is assured, then most of us gladly go and the pleasure experienced is perfect and complete. But companionship is not always personal. It may be that of a loving dog, a book, a fishing rod, a gun or rifle, or golf clubs. There are dozens of things which we find to be real comrades in our comings and goings in the wonderful out-of-doors. Many may even prefer the quietness of absolute lonesomeness as a quite sufficient companionship in the still places of the out-of-doors. What a varied and complex conglomeration are we, the children of mother nature!

At this particular moment our task is to try and convince the reader of the comradeship and companionship of the camera, not at any particular time or season of the year, but rather for the full round year. Would that it were possible to express fully all our convictions and sensations on so broad a theme. Not a few are the persons whom it has been our privilege to meet, who have considered it better to cast aside many companionships and adopt the camera as the most satisfying A very dear friend wrote only recently he had laid aside the shotgun and the rifle to take up the camera. Why? Because he found greater pleasure in hunting with the camera than in taking the life of birds and animals. Frequently we hear of the fisherman who realizes not less but larger, broader fun in following his loved brooks and haunts of fish, not with the cruel barb of hook or the lure of deceptive fly and artificial bait, but with the efficient camera. Never so sweet to his palate were the beautiful trout, as are to his eye the photographs which from year to year grow more precious as reminders of the times and places of fine fun and pleasure. No matter what have been our cherished companionships in the passed and passing days, there is good reason for every one to question, possibly not the giving up entirely of already dear comradeships, but whether the camera might not safely and wisely be added as an equal companion and comrade in our wanderings in the great out-of-doors.

Tried and true companionship has the quality of constancy. Storms and tempests of ill weather, either figurative or real, have no chance to break in upon or disrupt the happiness and permanency of good friendships. Oftentimes the harsher the obstacles the firmer the bonds of comradeship. Our camera long since proved to be true and faithful. Spring has no muddy ooze and wellnigh impassable roads or fords, summer no heat or dreaded thunder storms, autumn no chill and blustering winds, winter no icy blasts and heaped-up snows which can cause a rupture between the owner and his camera. It remains a delight in every passing phase of the whole round year To put the camera away at any season of the year is to turn one's back upon a true and tried comrade and will cause a distinct loss to our joy and contentment. Such would truly be a treacherous act.

Every hour of the day from dawn to dawn may be used by our comrade the camera, to record and preserve some worth while events in which the human mind or heart has found an interest. Sunset with all its lavender tints across the waters of the lake has taken on the higher tones of pink, growing deeper and deeper as the sun sinks lower and lower. The ravishing beauty of sky and water makes the heart beat more quickly; we stand in awe and try to understand the power of the Creator in painting the grandeur spreading from our feet up, up and up to the very zenith and even beyond almost to the place of the rising sun. Will the camera gather this grand beauty for us? With the proper filters, screens and emulsions we may depend upon our companion to give us in monochrome some fair returns to feast our eyes upon when we are far away and the glorious sunset has melted into dusk. With the autochrome we may have even more.

Shadows long and spreading haunt the shore and forest, gathering around our blazing campfire, and the gentle evening breezes play among the tree tops. The surface of the lake responds gleefully with dancing ripples in varied little families here and there. A



KYRA

FREDERICK F. FRITTITA

Pittsburgh Salon, 1922

daring fish darts to the surface to capture a feeble, tired moth, sending a series of ripples to the farthest shore. The piercing cry of a bird startles, as we fear an owl has found a mark for his strong talons and tearing beak. Night settles down and we rest our wearied bodies against a tree trunk, or at full length before the crackling fire, among the fragrance of the trees, listening to the sounds of the night of our loved out-of-doors. Our trusty little camera companion is with us even here and now, as with flashlight we record on film or plate the delightful environment of our camp, simple or complete, by the lakeside or in the depths of the forest, with the litter of utensils and varied necessities all about. How our senses will tingle with pleasure in the years to come, as we recall by the print all the enjoyment of that night in camp.

What can be said of one who fails to stir himself from even the sweetest slumbers to witness the crowning of the day at the superb rising of the sun? He loses not only what one sees at that charming hour, but the sound of magic music from the throats of happy songsters. It were useless to name the musicians, as locality has much to do with the birds we hear at early dawn. When the sun has really come over the top, we must have our comrade camera at hand. There is the possibility that the fleeting and changing image may be somehow impressed in our wonder box, and reinforced by filters and proper emulsions, in the coming days we may live again the sunrise beautiful.

Advancing day shows that the brilliance of the reds and gold of sunrise will not dominate all the hours. A mist is creeping, slowly yet surely, upon us. Distant objects take on a ghostly effect, and nearby things stand out diffused, yet strong. Bring out the camera, for it has a magical power to give pictorial effects, beautiful and not procurable under any other conditions of atmosphere. Try that vista towards the lake and landing, with the big tree on the right and the lesser ones in varied planes, each less distinct than its neighbor, with Jim ("Hold it right there, Jim!") on his way to the landing.

Oh! But it is going to rain, even now it is falling in almost solid sheets of water. No more fun for a while, except the fun which our companion the camera can give us, and that is considerable.

Where is Jim! Gone to the landing to make everything secure. Here he comes; see the water dripping from every point. He could not be any wetter in any event, so let us use him for a model. And, good natured fellow that he is, he poses in all sorts of positions. He is patient while we get the tripod ready, submits to all kinds of treatment, and will be as interested as everyone in the wonderful prints from these negatives while we gather around the fireplace at home in the coming days. Be careful of the camera; it is a good comrade, and requires the best of care and attention in this sort of weather. Wipe it thoroughly and dry it fully.

Such heavy rain can hardly last long. Ah! There comes the sun peeping and pecking at the clouds to get through. It must be wonderful up on the hill. Let's go. And up we climb to the higher levels, accompanied by the racing wind. The trees are whipped almost to the ground by its force and power. Why not try an exposure? And so we walk back and forth to right and left, forward and to the rear, finally to obtain a splendid viewpoint. Place those bending birches so they will blow into the picture, and those scudding cloud masses right there, and let it go. Won't that be beautiful? We can scarcely wait to have it developed.

On the summit at last, and spread out at our feet is a ravishing panorama of beauty. Were the cloud shadows on the hills and valleys ever more bewitching? We must get some of them on our film, to serve for the festival days which are to come in the quiet of our homes, when we live over again and again these days spent in the wondrous out-of-doors with our faithful comrade the camera.

THE SMOKE EATERS

WM. H. ZERBE

Pittsburgh Salon, 1922

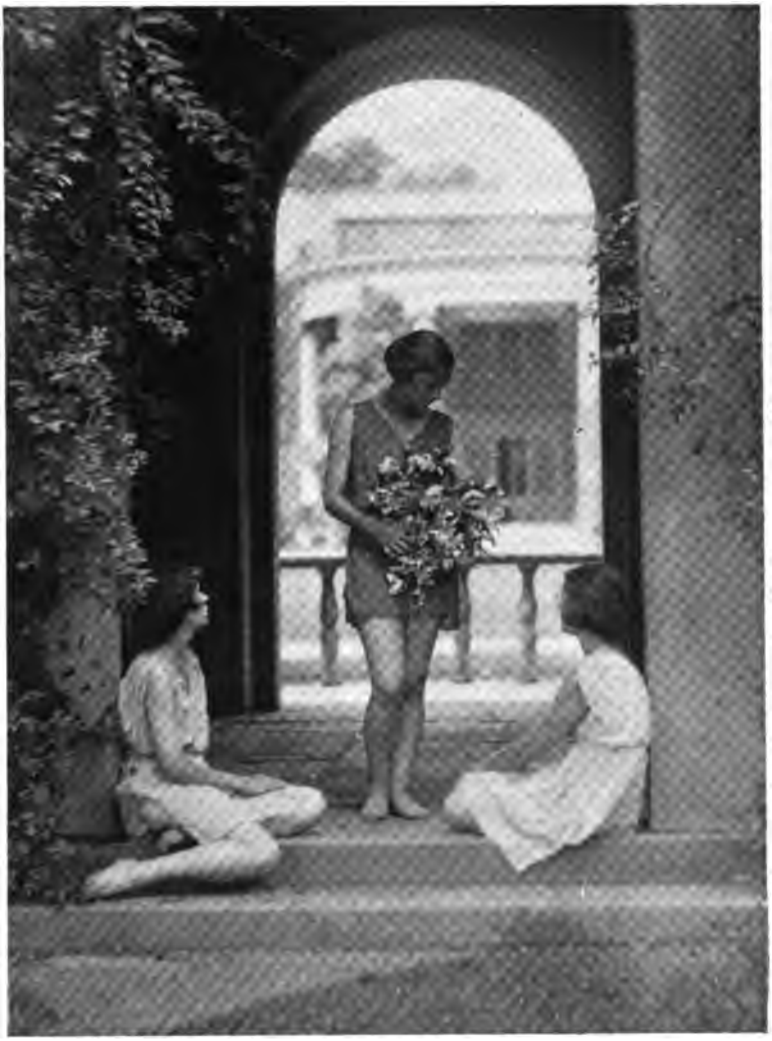
The summer is ended. The fall days are with us again. Riotous colors are clothing the hills and the valleys, which only yesterday were billowing planes of soothing greens. The delights of the out-of-doors are too strong to keep us within the walls of home, dear though it well may be; the demands of business, the varied duties which are a vital part of our schemes of life and living, have hard work to hold us to our tasks Off we go on many a hike or trip, but always with our camera companion. Even the roadside abounds in subjects which we feel constrained to try an exposure upon. The forest is carpeted with brown and yellow and tinted leaves, the clear, clean light is filtered through the limbs of trees holding, less and less each passing moment, the leaves of many tints and shades. Falling in gentle showers they seem almost sad in coming to earth. The forests are aisles of temples, the tree trunks are columns upon mighty columns placed by a majestic power and knowledge. We wander among them with a feeling of reverence and there comes a holy, inspiring uplift which does us good.

The tillers of the soil are gathering the fruits of their labors. Corn in the dry and yellow husk is piled on many hillsides in great heaps and stacks, golden grains are sheaved in the plains and valleys, pumpkins and squash lie in profusion among the varied crops. Where is the person who delights not in this paradise of the harvest time of crops and not less truly a harvest time for the camera also? Pictorial and artistic pictures abound with man and beast and home and barn all ready and at their best to serve the camera user. Never was running brook more beautiful than while it rushes and dances amid the golden splendor of the autumn time. The sky rarely seems so blue and the great castles of white clouds so grand and majestic as when a northwest wind gently drives them across the vaults of autumn overhead. During the fall months the heavens and the earth challenge us with our cameras, screens, emulsions on plate and film to attempt the capture of wonderful things all about. Our skill will be taxed to the limit, and in all probability we shall be sent back to our books and teachers to explain our failures, but also to our friends and fellow workers and critics with our successes.

The wind whistles as if it had in store some stirring things. Windows and blinds are rattling, the fires seem to take on a new fierceness, roar and fume as if battling with the raging winds. Every movable article out of doors is fretting and uneasy. A strange restlessness is in the very air, disquiet permeates the nooks and corners, anxiety seems seeking out a covert. Winter is surely on the way with its chills and shivers, it looks and feels like snow. And here are the dancing, drifting, driving snowflakes, blotting out the landscape, covering the soiled and stained earth, making a pure white blanket over all the unsightly odds and ends of the out-of-door world. Fortunate is the one who has not put away his camera, thinking that all the companionship of it has been expended in the warmth and glow of balmy summer days. Happy is he who has the vitality and eagerness to equip himself properly against the elements and joyously plunge out into and among the drifts of crispy, crumbly snow.

No season of the year rewards us so generously for efforts to get out-of-doors as does the winter time. Blood races to its tasks with every intake of frosty air, the lungs expand and do their duties with mighty power, muscles ache maybe, but they harden and strengthen with every movement of this winter exercise, and life is roseate with action and reaction. Would that we all might be able to embrace the winter season with the vigor and dash of highest human energy.

But our duty is to focus upon the pleasure and artistic profit of the camera in winter. No portion of the year is richer in photographic materials for pictures. Within a few feet of home is a rich harvest, when the snow has piled up about our houses and buildings. In



JUNE
JULIA MILLER WALBRIDGE
Pittsburgh Salon, 1922

the early and late hours of the sunshine there is scarcely a doorway or window which is not a work of art when dashed with some snow and ice. Every walk and pathway is graceful and wonderful in garments of the snowflakes. Fences and shrubbery are marvelously pretty in snowy coverings when the dancing sunbeams are at play. No two, three or more snow-draped buildings, if properly related one towards another, but have pictorial possibilities, while the side streets and main avenues are abounding in situations of appealing power for the film or plate. Men, women and children lend themselves to the pictorialist, to say nothing of horses, dogs and cats. What is true of our own home surroundings is equally true of our neighbors', except that each is different from the other. This is no detriment, rather a help, because it increases the field of activity with our camera, provided of course, we are on good terms with our neighbors, as we ought to be. To the real city-dweller possibly all of the above may not be as strictly applicable as to the suburbanites or country folk.

Let us broaden our scope and with garments of protection for feet, limbs, arms, hands and ears, get out in the fields and woods to a world of charm and magical enchantment, for such surely is nature when clothed in crystal snow garments. By railroad, electric, automobile, sleigh or afoot, anyway to get into the allurement of snowy uplands or valleys. How grand it is!

Just a word of caution: do not break out tracks or trails in unbroken snow expanses until you are sure they will not spoil the artistic or leading lines you may desire to secure in your exposures later. It is often very aggravating to find that yourself, or possibly another, has made trails which entirely destroy some beautiful picture you aspire to produce. It is always better not to mark and mar by your tracks what someone may want to use later for broad expanses of unbroken snow field.

Many beautiful snow pictures are made from very simple objects in a snow-covered area. A clump of weeds with long shadows on a crispy snow field is often splendid, while an old rail fence with clinging snow is sometimes very useful. Two, three or four clumps of evergreen bushes or small trees line up finely for good effects.

The zigzag of a brook frequently gives a nice artistic line when the banks are piled high with graceful curved walls of pure white snow. Whether the current is open to view or is noisily working its way along under the ice really makes no difference. In following up or down a brook, one comes upon place after place quite suitable for exposures, and it is often a nice little problem which to accept or reject.

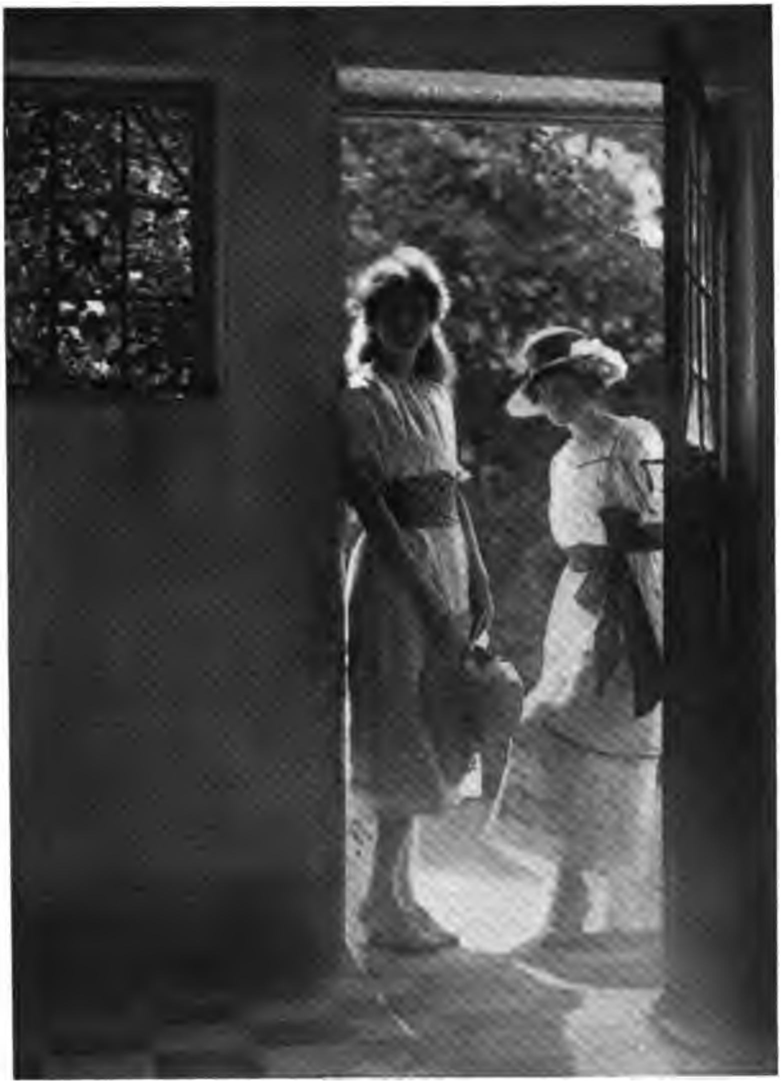
The cat-tails in swampy places sometimes are found in isolated clusters in a broken-up foundation of snow; these with a pleasing background make attractive compositions.

A building, clump of brush, tree, bridge or other object attractively laden with snow can be made very picturesque by tramping out a pathway towards it in the snowy foreground, and with the necessary balance of some proper object, we have the elements of a picture of beauty and quality. The introduction of a figure will possibly add amazingly to a snow scene.

The curving shore of a pond or lake with overhanging limbs to which snow is clinging furnishes abundant photographic materials. Tracks in the snow, otherwise not broken up, made by sleighs, wagons, snow shoes, ski or wild animals are many times of great service in completing an attractive picture.

Boys and girls at a coasting slide may be utilized for masterpieces, and how beautiful are scenes viewed through driving, scudding snow squalls, softening the sharp details of near-by or more distant objects, and giving a quality to pictures not otherwise possible.

Bunches or patches of dried grasses may often be used to give direction or leading



SUNSHINE AT THE DOOR

STEFANO BRICARELLI

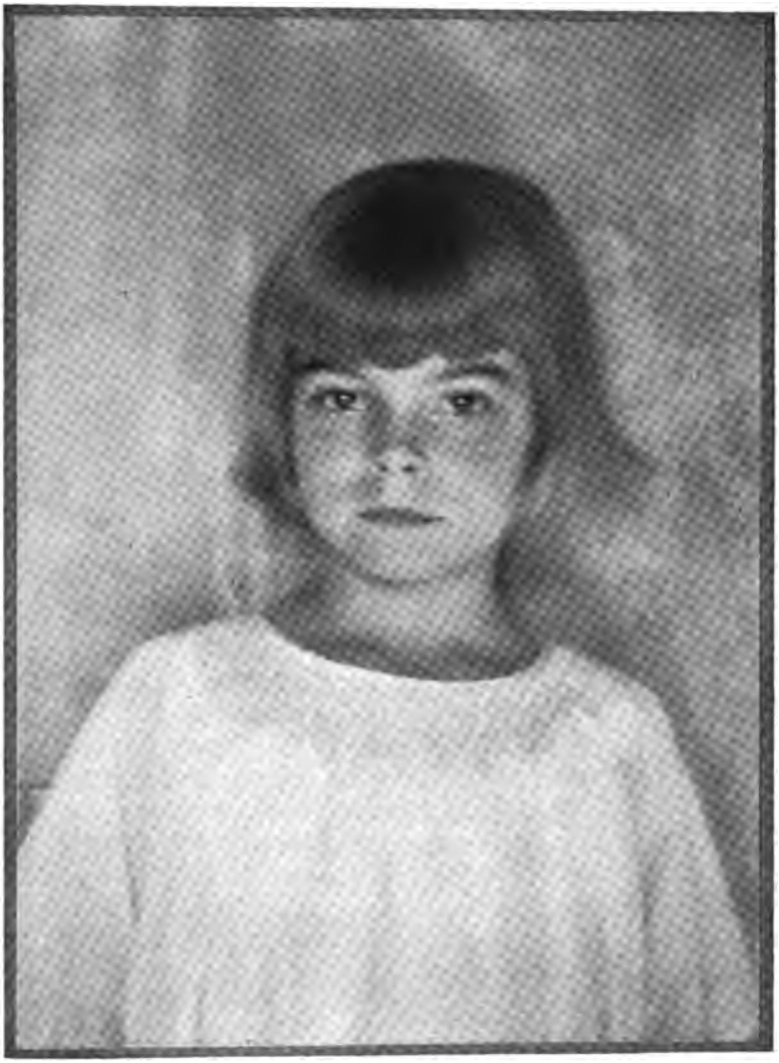
First Prize, March Senior Competition

AGNES SALOME E. MARCKWARDT
Third Prize, March Senior Competition

into a view of snow expanse. Snow trails through woods or forest frequently provide very fine compositions and have a solidity or weight often lacking in snow pictures.

We think experiences prove that emphasis on the foreground in snow scenes is a wise plan. A bold, finely detailed foreground with the background unassuming will in most cases be best, and give a keen satisfaction in the finished print. There are exceptions, of course, but in most cases this seems to be true.

The glories of winter must melt into the slush of early spring. Of necessity we shall have to wade about in oozy mud as the frost spirit relinquishes his hold on things terrestrial. But even now do not put aside our old companion, the camera. Swollen rivers and brooks turbulent with mighty waters are bidding us come. Have you not noticed the beautiful bend and sweeping curve in a great volume of spring water as it rushes over the top of a dam? Nothing just like it is to be found anywhere else. Give the camera a chance at it along the top of the plunge and be rewarded with a splendid exposure. Picture it also at the end of the crashing leap as it falls in broken fury on the ragged rocks below, sending spray and mist in fantastic shapes all about. Even the puddles of water



PORTRAIT OF A CHILD Mrs. Sterling Smith

Second Prize, March Senior Competition

in the road mirror many a charming picture well worth our earnest effort. Flooded meadows are prolific for the pictorialist and he may try again and again, aided by the clouded sky and waving grass tips.

Nature has a pleasant way of showing in the springtime some wonderfully soft colorings of greens, yellows and reds, not brilliant and flaming as in the fall, yet eloquent to our adoring eyes. Real tests are these for the camera. The spring-blooming trees and shrubs are always interesting to the photographer and he may, if so minded, procure many fascinating studies of individual branches or clusters as well as of trees in the mass. Beautiful effects are made by the apple trees in full bloom along our roadsides, almost if not fully equal to the gorgeous displays shown to our Japanese friends by their famed cherry bloom. These are suitable prints for the addition of watercolors, if we have the ability to do this sort of coloring well.

Farmers are at work with the plow and harrow making possible for the camerist many remarkable compositions of the upturned earth clods as they lie in long even rows, catching the sun in furrows along the hillsides. The straining teams of powerful horses as they labor patiently step by step are eagerly sought after as subjects for much-prized pictures.

We could have visited many other places in our little tour among the seasons, many scenes we have of necessity omitted to mention, the sand dunes, along the shores of the mighty sea, even upon her bosom in the little and great ships of sail or propeller. But we most earnestly hope the truth in our feeble effort has found a receptive niche in the mind of the reader, that the camera is a good companion always. The habit of having it always handy and every ready for action will richly repay in satisfaction of mind, and the prints will become dearer as the years shall take their flight. Use the camera all the year round.

SPEED PHOTOGRAPHY

C. B. WEED

PROBABLY there is only one type of shutter that is really efficient for serious speed work and that is the focal plane shutter. I do not mean to belittle the between-the-lens type, but its field is limited in this work unless used with very short focus lenses; unless you favor the subject by taking it pretty nearly head-on and at the theoretical "moment of rest" (which when applied practically is a myth), and unless you are content with very small images. For efficient and reliable speed work the focal plane shutter is the only one to be considered. It has the required speed, generally up to about 1-1000 second and it passes about twice as much light with the same exposure as does the between-the-lens shutter. Every little bit helps when making exposures around 1-1000 second.

There are two classes of cameras equipped with focal plane shutters, the Graflex type and the hand type, such as the Speed Graphic. Of the two, the reflecting form is the more practical, as you have control of the focusing up to the instant of exposure. Work of this kind often calls for rapid and accurate focusing, which would be almost out of the question for the hand camera man. The reflecting camera is also much easier to operate.

In most cases, it is only fair to concede that focusing must be done before the actual exposure is made and therefore one who is accurate at estimating distances or who cares to bother with the ground glass can do good work with the hand camera. I recommend, however, the mirror type because of the ease and certainty of focusing. As a proof that I am right, witness the press photographers who *must* use the best. What camera do they use? The Graflex.

Personally I have found a lens working at *f*:6.3 or *f*:6.8 to be fast enough in any decent light and one does not often try to do high speed work in the rain! A lens of this speed possesses good depth of focus which is not to be found in an *f*:4.5 lens of any reasonable focal length. It has the added advantage that the separate elements of the lens may be used alone. It is true that the *f*:4.5 lens is often very useful, and if you feel that you must have this speed, there are several excellent types, at least one of which is con-

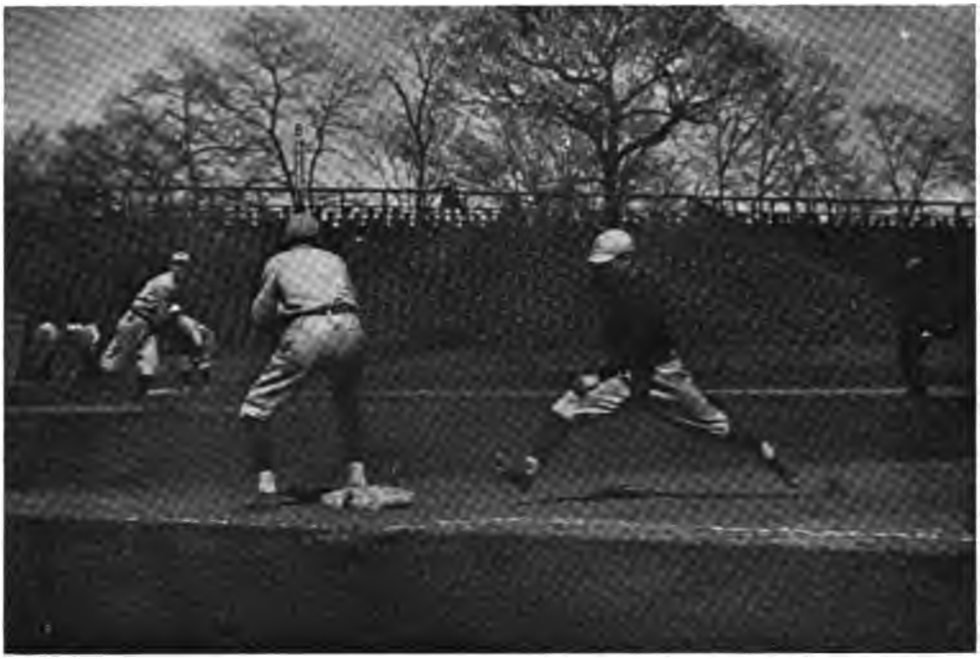


Fig. 1 C. B. Weed

vertible. I have found, however, that a speed of *f*:6.3 is able to take care of nearly all of my exposures.

Undoubtedly you will wonder why I refer to the use of a single element when writing an article on speed photography. A single element works at a relatively slow speed, so how can one use it for short exposures? The answer is that you will not use it for extremely short exposures, because if you can get near enough to the object you will use the doublet with its greater speed. I have found that exposures up to 1-300th second can be given, when using a single combination, with printable negatives resulting. The long-focus lens you will find to be extremely valuable when circumstances prevent you from getting close enough to the object, such as when working at a baseball game, from the stands, or at a crew race when you can get no nearer than the bank of the stream.

It is necessary, of course, that the camera should have sufficient bellows extension so that you can use one half of your lens. I use a 3¼ x 4¼ R. B. Auto Graflex which, on account of the long bellows and revolving back, is an ideal instrument, not only for speed work, but for general photography. I use plates of a speed of about H. & D. 260 for all exposures under 1-500 second. For exposures shorter than this I use the fastest plate I can get.

The exposure required to stop motion depends on four things: The speed of the moving objects (the greater the speed, the faster must be your exposure); the focal length of your lens (the longer the focus, the shorter the exposure); the angle at which the objects move in relation to the line of sight (movement at right angles requires the shortest exposure and movement directly towards or directly away from the camera can have more time without the movement being apparent); the proximity of the moving object (the nearer to the lens, the shorter must be the exposure).

The exposure that must be given is always a problem when first taking up speed work. The best guide I know of is the one issued by the Folmer & Schwing Division of

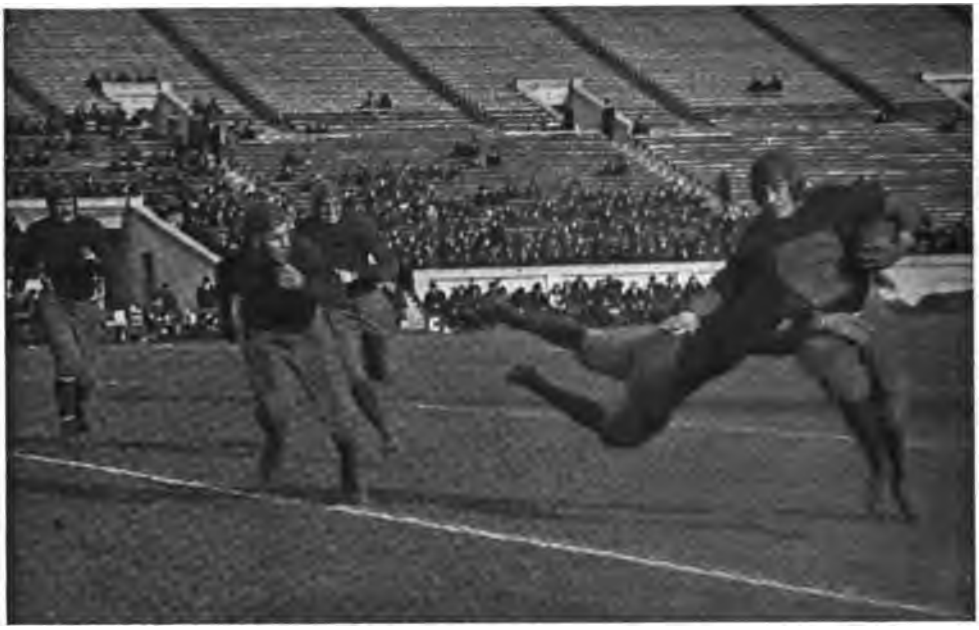


Fig. 2 C. B. Weed

the Eastman Kodak Company, which consists of a circular disk upon which are given the necessary data for all exposures. Most of the tables I have seen are useless with the exception of this one. As soon as you became familiar with speed work, your own experience will be the best guide.

The diaphragm opening must be varied to suit the existing light conditions and your exposure. I find that I can give considerably longer exposures than those shown in most tables and still stop motion. This is an advantage, as it is thus possible to use a smaller stop and get better depth of focus.

The exact instant to release the shutter so as to "stop" the moving objects is a very important consideration. The plan I have followed is the same as advocated by Mr. Adolphe Abrahams, and I cannot do better than to quote his remarks on this subject: "My explanation is a psychological one — I suggest that in dealing with the motion of an object the further course of which must be perfectly definite, through past experience one anticipates this course and sees an event in advance of its actual occurrence; to reverse a time-worn proverb, believing is often seeing. This anticipation neutralizes the time lost by the existence of a human being's latent period, so that the exposure is actually made at the exact instant. . . . Now it is clearly necessary to introduce another factor; the inertia or latent period of the shutter, but the time which, in a reflex, is occupied by the passage of the mirror before the shutter descends would seem to be, and in fact has been stated to be, a serious detriment to accurate working. It is nothing of the sort: the length of the latent period of your shutter is of no consequence at all so long as your camera and yourself are co-ordinated. The whole art of training for 'instantaneous' photography consists in the establishment of a perfect sympathy between camera and operator until they become one with a regular latent period. . . . That is an argument in favor of starting with a reflex rather than working up to one, because it is almost superfluous to point out, this delightfully harmonious working, the establishment of a *constant* latent

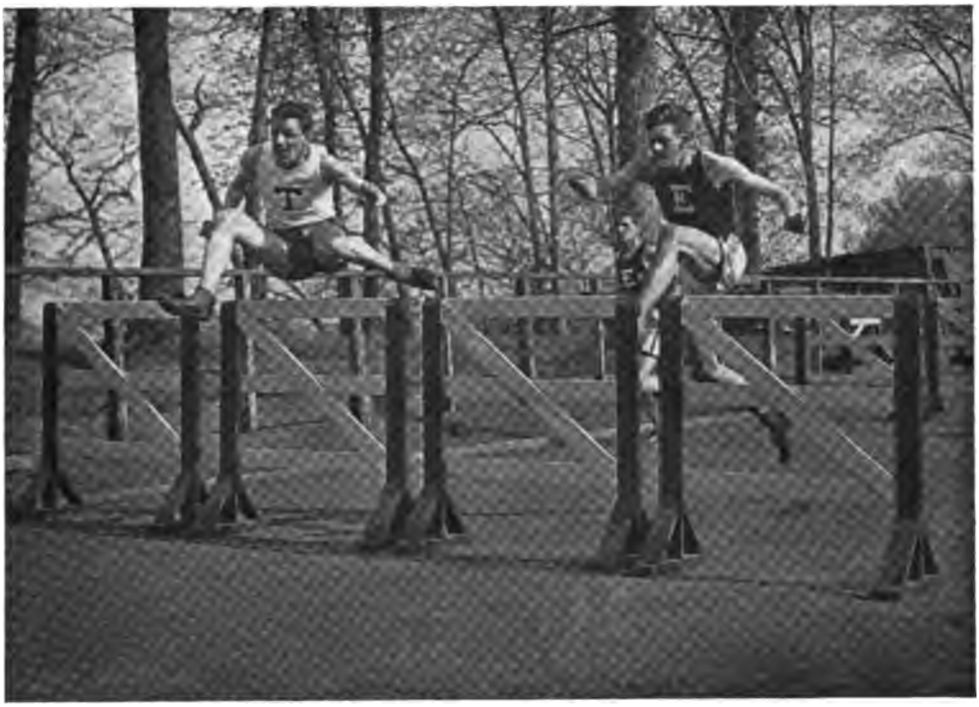


Fig. 3 C. B. WEED

period which is neutralized by the period of anticipation, is not acquired without a great deal of practice. . . . Train yourself to expose when you *think* your subject is exactly where you want it, and, in time, you will surprise yourself with your own, almost uncanny, accuracy. If you do not work on this principle you will have no system at all and you will never be able to regard yourself as a reliable photographer, but only as a man who occasionally makes a lucky fluke." I trust that you will read this paragraph more than once as, to me, it contains the very heart of successful speed work.

The development of a plate that has received only the minimum of exposure is best done in the tank. Of all the developers I have ever used, pyro-soda is the best. When developing Hammer plates, I use their regular pyro-soda formula, and for the Marion Record plate, I use Marion's pyro formula, developing until as much detail is obtained as is possible. A good way of dealing with a plate that is known to be underexposed is to put it in the tank for a short time, until detail begins to appear and then transfer it to a tray of clean water for an hour or so, finally placing it in a tray containing a strong solution of pyro-soda to give the necessary density.

For printing thin negatives by contact, Azo Hard X is in a class by itself, for, if you have very thin negatives, you can slightly underexpose in printing and force in development. Azo will not stain under even such drastic treatment as this. Personally, I use the enlarging lantern almost exclusively for printing. It is a well known fact that enlarging adds contrast in printing, a fact that can be utilized in printing from underexposed negatives. I recommend the use of either Contrast Enlarging Cyko or Artura Carbon Black for enlarging.

One important point is to "keep your eye" on the subject rather than on its image on the ground, glass, whenever possible.

Focus on some object by which the moving objects will pass, before the actual exposure is made. If you use the hand camera with direct vision finder, it is all right, of course, to follow the subjects through it. Another tip I would like to give is not to use extra alkali in developing the plate with the idea of forcing out detail. Only fog and stain will be the result of this. If the exposure has not been sufficient to impress anything on the plate, forcing with an overdose of alkali never will produce it. I think it necessary to speak of this because I know from experience that the temptation to do this is very strong when developing a plate that is known to be underexposed.

As speed photography includes all the outdoor sports and many other things besides that must be done outdoors, it will tend to keep you out in the open air, and hence will render you more fit for the strenuous daily life. It will enable you to secure many interesting and unusual pictures which could not be equaled in any other branch of photography. It is a fascinating sport. If you do not believe me, get a camera with a focal plane shutter and try it, and I venture to say that you will very soon become another enthusiast for speed work.

The accompanying illustrations will, I trust, be beneficial. The data are as follows: —

Fig. 1. Exposed with one element of a 7-inch Ross Homocentric lens, the equivalent focus of which is 14 inches. About 1-295th of a second at *f*:12 on a Hammer Red Label plate. This is an instance of the advantage of using a long focus lens, as this picture had to be taken from the stands.

Fig. 2. Exposure, with a Cooke lens, Series 2, 5 inches focal length, was about 1-350th at *f*:6.3 on a Hammer plate. This was not faked or posed in any way, but is an example of the advantage of the reflecting over the hand camera for fast focusing.

Fig. 3. Exposure with Ross 7-inch lens at *f*:6.8 was 1-400th second on a Hammer Red Label plate.

PHOTOGRAPHY WITH INVISIBLE LIGHT

FRANK M. GENTRY

AS SCIENCE grows older, man observes more and more that his senses are limited to a small sphere of accustomed sensations. His nostrils can detect but a small number of the thousand odors that dominate this planet; his ears are sensitive to but a few of the many waves of the atmosphere; and his vision is limited to a comparatively small portion of the spectrum. The scientist, when he dives into the mysteries of space, does not depend upon his own small senses but employs some instrument to render those mysteries capable of study. Thus, when he investigates the vibrations of the ether called light, he makes use of photography, the artificial eye of science. By it he can see the unseen; he can study invisible phenomena; and he can uncover the wonders of the extended spectrum.

The complete spectrum, as we think of it today, begins with the Hertzian waves and extends beyond the X-rays (Fig. 1). Occupying a small space between these two groups of vibrations, and comprising wave-lengths of from about 0.000068 cm (red) to about 0.000040 cm (violet), is the visible spectrum which consists of the various colors ranging from red to violet. Just beyond the region of red there lie the infra-red or calorific waves,

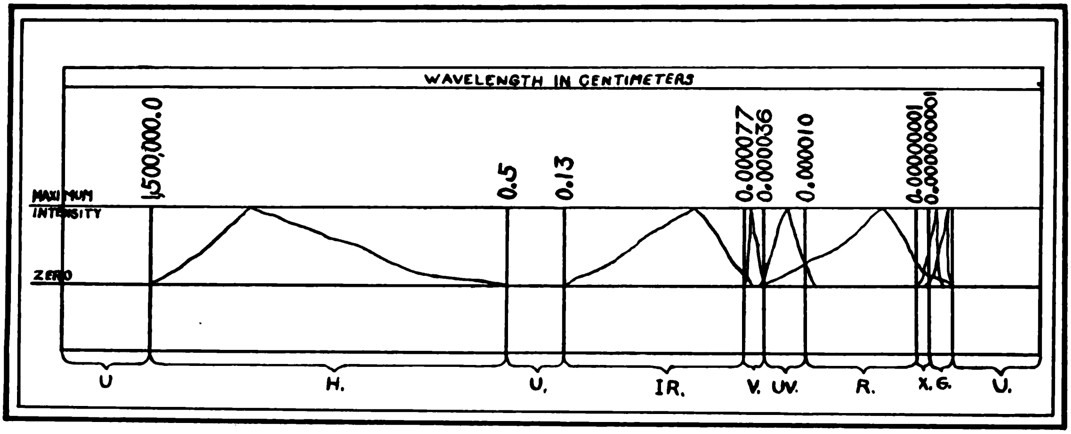


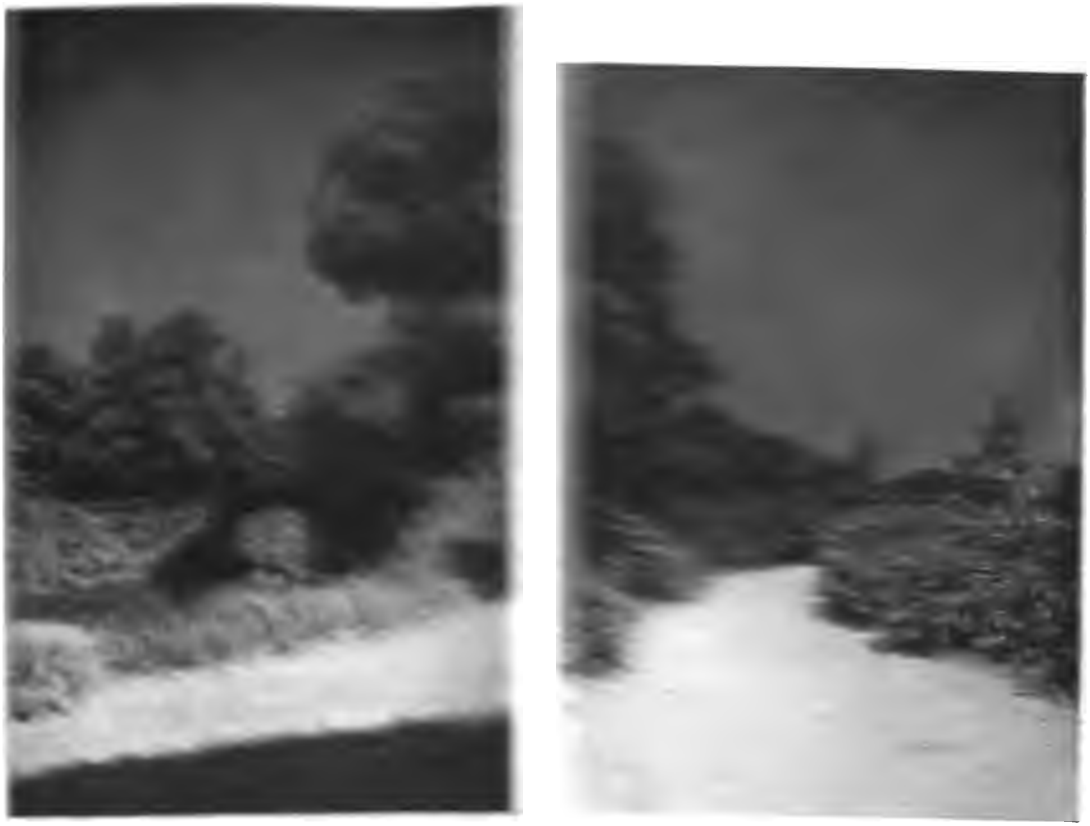
Figure 1. U–Unknown region; H–Hertzian waves; IR–Infra-red rays; V–Visible spectrum; UV–Ultra-violet rays; R–Therapeutic waves; X–X-rays; G–Gamma rays.

while just beyond the region of violet there lie the ultra-violet or actinic rays. Scattered here and there between those parts with which we are familiar, there are to be found many regions, unexplored and unknown. Our discussion will be limited to those wave-lengths of from about 0.000068 cm to about 0.000072 cm; those which are just too long for the adaptation of our eye and which are known as the infra-red. This region extends even as far as wave-lengths of 0.03140 cm, but limitations are of necessity rather than of choice. Dry plates are sensitive to wave-lengths only a trifle longer than 0.000070 cm and it is only by the aid of a supersensitizing process that we are able to reach wave-lengths of 0.000095 cm.

Ultra-violet photography is quite out of the reach of the average amateur, unless he is able to procure the special quartz lens employed. Infra-red photography, however, is within the reach of anyone who possesses an ordinary plate camera.

Before entering into the technique of the process, it would not be out of place to closely examine the accompanying photographs and observe their peculiarities (Figs. 2 and 3). Pitch-dark sky, snow-white foliage and midnight shadows are the chief characteristics of this region. These strange effects are due to the failure of the atmosphere to scatter the long waves. It will be noticed that the sky is darkest near the zenith, from which it gradually decreases in density until it reaches the horizon. This is easily explained by the fact that the least haze in the atmosphere causes a scattering of the long waves; hence, since the haze is greatest near the surface of the earth, more light is reflected into the camera from that part of the sky near the horizon.

One of the chief peculiarities of the infra-red rays is their remarkable power of penetration. If a distant landscape be photographed through a deep blue filter, the picture will show little detail of distant objects, it will be flat and lack depth of field, and above all it will have a general hazy and misty appearance, all this being due to low penetrativeness of the short blue waves. If, on the other hand, the same scene be photographed under exactly the same conditions except with an infra-red filter in place of the deep blue one, the effect will be immediately apparent. Distant objects will appear clear and distinct and there will be greater depth to the scene. If it were not for the strange and unnatural appearance of things in this invisible region, infra-red waves would find use in telephotog-



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[illegible] plates will be [illegible]

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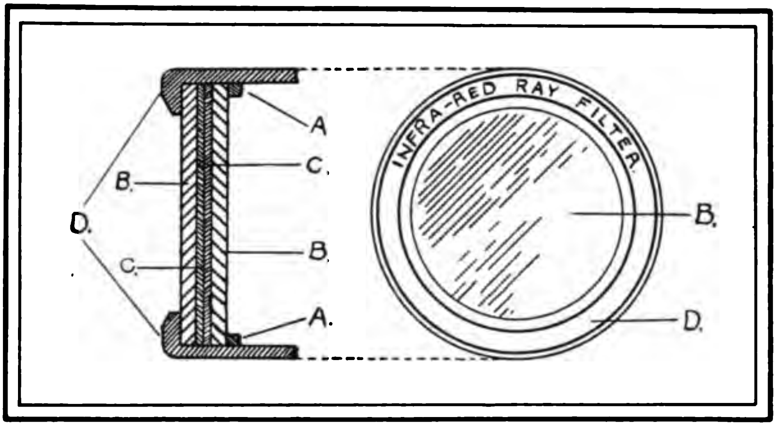


Figure 4. A–RING; B–COBALT GLASS; C–GELATINE FILM; D–LENS HOLDER.

best way of holding the filter before the camera, but if one cannot be obtained any method may be employed which will allow only filtered rays to reach the plate.

Cut two pieces of the densest blue cobalt glass, B, of a circular shape to fit the holder. Fix-out some unexposed camera film in the ordinary hyposulphite of soda bath, containing the usual hardening solution. Wash the film until it is free from all traces of the fixing bath and immediately place it in a strong solution of a deep yellow dye, bordering upon orange. Mandarin orange is good. Allow it to remain immersed for a few hours until the film has reached a deep dandelion color. After dyeing, rinse the film in a little water and hang it up to dry in a dustless place. Later cut those pieces which are free from blemishes and spots to the same size as the circular glasses.

In order to adjust the filter, interpose the pieces of yellow film between the two cobalt glasses and place them in the container. Cover your head with a black cloth and look through the infra-red filter into the sunlit landscape. The eye is slightly adaptable to the shortest of these waves when the remainder of the light is excluded and after a short wait the scene will come dimly into view. The number of pieces of yellow film must be adjusted until the sky is darker than the foliage of the trees. Unless the densest cobalt glass obtainable is used, under-filtration will result. After the filter has been correctly adjusted, clean the inner surfaces of the glass and cement the whole by smearing the edges with Canada balsam. Place the completed filter in the supplementary lens holder and fasten firmly in place by inserting the ring, A.

Of course the filter can be used only with panchromatic or spectrum plates which are sensitive to wave-lengths of about 0.000072 cm. The ordinary orthochromatic, isochromatic, or trichromatic plates will not do. The first radiations emitted by the filter, if properly constructed, are near wave-length 0.000065 cm and therefore the photographs will include a small but yet sufficient part of the infra-red region. Wave-lengths of 0.000095 cm can be recorded, however, by supersensitizing the plates with alizarine blue S, compounded with silver nitrate and ammonia.

The exposure must be found by experiment, as the photographic intensity of these waves cannot be accurately judged by the ordinary methods. As a guide to experimentation, however, it has been found that the correct exposure for an average landscape in the middle of June at noon in intense sunlight is about five minutes with a diaphragm aperture of *f*:16.

RETOUCHING MATERIALS

THERMIT

A RETOUCHER, whom I once knew, had an outfit which consisted of a small piece of lead pencil, a bottle of home-made medium, a second-rate sable, and a chunk of hard Indian red water-color. The pencil was of no particular quality, and the medium was merely a mixture of rosin and methylated spirit.

To any other skilled craftsman an outfit of this type would be not only useless, but ridiculous, yet it is no uncommon thing to come across retouchers working with tools little better than those I have described. And I must admit that the work done with that particular outfit was excellent. But having admitted that, I am not going to admit that the average retoucher can work under the same conditions without the work suffering, or that my friend's work would not have been better had he taken an interest in his tool box.

There are many outside this branch of photography who think that a pencil, or a pencil and a brush, are the only things used in retouching, but retouchers of experience know that a very large number of things have their uses. There are so many that we might easily divide them into five classes, viz., pencils, brushes, knives, paints and stains and mediums.

Unless a retoucher is fortunate enough to be restricted to one class of negative on one kind of plate or film, no single kind of pencil will cover everything with full satisfaction. Two or three grades, say 2B, HB, and H, or their equivalents, will nearly always be found to repay the extra trouble in keeping and sharpening. Before the war I do not remember ever seeing anything but loose leads in screw-top holders used for retouching, but when these became scarce, as they did in many places, drawing pencils seemed to become common among retouchers. Of the two, there is little to choose except that the pencils are more easily broken. To prevent this I have found a stiff paper tube every serviceable. It is made by wetting a strip of paper with gum or paste and winding it round the pencil until a tube is formed. The tube is slipped off the pencil and allowed to dry hard before being put into use. For some unknown reason, leads without wood are not commonly stocked by artists' sundrymen, or at least I have always experienced difficulty in obtaining them, and when good pencils can be bought in almost any city street there is not much inducement to ferret about for the uncovered leads. It is possible to strip the pencils and transfer the leads to holders, but unless one is very skilful this may prove a very expensive and irritable process. I have tried Venus, Velvet, Royal Sovereign and Winsor & Newton's pencils with every one satisfactory, my choice being more or less for the "Winton" pencil of Winsor & Newton.

There are more than two ways of sharpening a retouching lead, but there are only two which are really expeditious and satisfactory. One is to rub the lead on a solid block of sand paper, revolving it at the same time so that the grinding is done fairly evenly all round. To guard against breaks and to hasten the sharpening a finger tip is pressed on the lead where it rests on the sand paper. The other way, which is quicker and cleaner, is to fold a piece of sand paper and hold it in the left hand with the open edges facing the right hand. The pencil or lead, with about two inches of lead exposed, is held in the right

MY FRIEND A. J. P. THEO M. FISHER

First Prize, March Junior Competition

hand, the lead pointing towards the paper. Putting the lead into the folded paper it is worked in and out rapidly and revolved at the same time, the result being an extremely fine point in a very short time without risk of breakage. The sand paper should be fine, and the piece large enough to allow the edges to be turned back over the finger and thumb. This precaution will prevent the lead stabbing one in the case of it slipping from between the folded paper when sharpening rapidly. Through using too small a piece of sand paper when sharpening rapidly I once had my thumb mottled with points of retouching lead.

The only brushes known to some young photographers are "spotting" brushes. As to just what constitutes a spotting brush they are not always very certain. The brushes sold under this title are invariably short-handled sables, similar to those used in water-color drawing, and artists' sables are at least as good as anything for this work. Unfortunately, sables of any quality are rather dear; one can pay as much as $1. for a single brush of a suitable size. Second-quality brushes are cheaper and good enough for most purposes. Siberians, which run about .25 each, can be used for blocking out, except where there is very fine detail; and with skill these brushes will spot, but for regular work the sable is essential. For filling in masses of opaque when blocking out large negatives, a camel's hair mop is very useful, but a common practice is to cover such spaces with gummed paper which will not rub off or abrade other negatives happening to come into contact with it. An uncommon type of brush with retouchers is the stencilling brush that is made for "Florescan" work. With this brush, paint put on to the back of a negative can be stippled or "scrambled" into the softest of clouds or vignettes. Negatives can be built up in this way, and the printer saved much "dodging." Talking about brushes, the glass brush also has its uses. But this "brush" is more of a knife than a brush, being used for local reduction of density. Then there is the air-brush, which though not like a brush, acts as one. Water-color or dye can be brushed on the gelatine side of a glass negative or on both sides of a film. On the back of a glass negatives thin red varnish can be used if a base of matt varnish is first laid on. But varnish messes the instrument, and if it is used extra care is necessary in cleaning. When air-brushing a negative, the image should be shielded to prevent any spray from reaching it. This is necessary unless one is very expert with such work. The water-color or dye should be fairly strong and the air pressure high to get the best results.

A doubtful point with some spotters is the size of brush best suited to their work. It might appear at first sight that small brushes would necessarily do finer work, but this does not always follow. What is essential is strength and point, and these are often more noticeable in a large brush. But individual taste varies. I prefer a No. 2 for spotting and Nos. 3 and 8 for blocking out. At times I come across a No. 0 which is beautiful for delicate work, but it is not often. For edging a painted vignette, a No. 3 stencil brush is about right. Air-brushes also have their sizes, and here I prefer the No. 2 "Color Spray." A point about all brushes (and pencils, knives, etc.) is the thickness of the handle. It seems usual to make handles in proportion to the hair, lead, or blade carried, instead of to the hand, and I find many handles are too thin altogether to hold for long without inconvenience, if not actual cramp. Winding such thin handles with lantern slide binding to increase the thickness of the grip results in better and easier work. I once knew an artist who stuck all his brush handles through pierced corks for the same purpose, though this would be going to extremes for anyone not possessing an obvious fist.

Some retouchers are very particular about their knives. Others seldom or never use one, and when they do their pocket-knives do duty. As it happens, this is a place where the actual instrument is not by any means so important as the skill behind it, and in the hands of an expert the pocket-knife will do better work than a first-class special knife in the hands of a novice. The Bruce retouching knife is well known, and special knives are also made and supplied by dealers; but whatever knife is favored, to get the best from it, it must be kept sharp. Not everyone can sharpen a knife to the required edge, and it may pay to have one's knife seen to occasionally by a cutler. Another factor in knifing is the state of the film. It should be bone dry, and a good plan is to warm a negative before attempting to knife it. For large patches of reduction the glass brush or a dab of metal polish on a bit of wash leather will prove easier than the knife. Another dodge is to rub the negative with a mixture of methylated spirit, water, and borax. A pinch of borax in sufficient water to dissolve it is added to about three ounces of spirit, this making a very effective reducer of dry negatives. It can also be used on bromide and gaslight

ROSES DR. HANNAH G. MYRICK

Second Prize, March Junior Competition

prints. The preponderance of spirit in the mixture precludes any wetting of the gelatine which would delay further work.

The retoucher's palette should not be limited to a piece of hard, black water-color. Lamp black, Indian red and neutral tint are all useful, and a china palette to carry them is not a luxury. Tube colors are cleaner than cakes or pans, as sufficient for the day only can be put out fresh each day. Black and neutral tint will cover all ordinary spotting and vignetting or working up on the reverse side, while the Indian red is good for very opaque work, such as blocking out. The proprietary articles for blocking out are too well known to need mention here, though I may refer to one which was not primarily intended for the work but is nevertheless excellent. It is process black. Any yellow, orange or red dye can be used on a negative, either from a hand brush or an air-brush. Red ink is very serviceable for one. It should be remembered though, that dye is not so easily removed as paint in the case of error. When it is necessary to remove it a weak bath of sulphuric acid will often do the trick.

I have tried most of the made-up mediums on the market and found them all useful. They differ in strength and "feel," but will all do the job for which they are intended. When a retoucher complains that a medium is too strong, or not strong enough, it may be that it does not suit his touch and pencil. A softer or harder pencil may be all that is required. Medium can be made fairly easily, but as there are so many kinds of rosin about, and so many qualities of turpentine and other solvents, formulae are not very decisive. There is no harm, however, in a retoucher experimenting for him or herself if a home-made medium is desired. Good violin rosin and methylated spirit (or better still, rectified spirit) will make a workable medium. Or rosin dissolved in a mixture of turpentine, kerosene and linseed oil, the proportions of which can be varied to give differing mediums, always keeping the turps in excess of the other constituents. Gum sandarac is used sometimes in addition to the rosin, but when mixtures become complicated the question arises as to whether it is not best to buy a ready-made medium instead. Varnishes also can be bought ready for use, ordinary clear varnish being obtainable for warm or cold use. It is not so popular in these days of cheap work as it was in the past, but it has its value, and it is useful to be able to varnish a negative when necessity arrives. Matt varnish is very often useful for giving a working base on the glass side of a negative, and its use does not demand the same degree of care and skill required by clear varnish. With varnishes I will include mucilage, as this has its uses in a similar way. For undoing scratches nothing is so good as a bath of mucilage. Gelatine solution, gum arabic, seccotine in solution, and other clear gums can be used. The mucilage should be poured into a dish, care being taken to keep out dust or other foreign matter. Bubbles also must be avoided. The negative is slid cleanly under the solution, and once completely covered it is removed as carefully and put to dry in a dust-proof place. If cleanly performed, this operation will fill in scratches in such a way that the negative can be enlarged from by condensed light without the scratches being recorded. It is rather difficult to avoid bubbles and dust, but if the scratches are severe or numerous this method is better than tedious and perhaps unsatisfactory spotting.

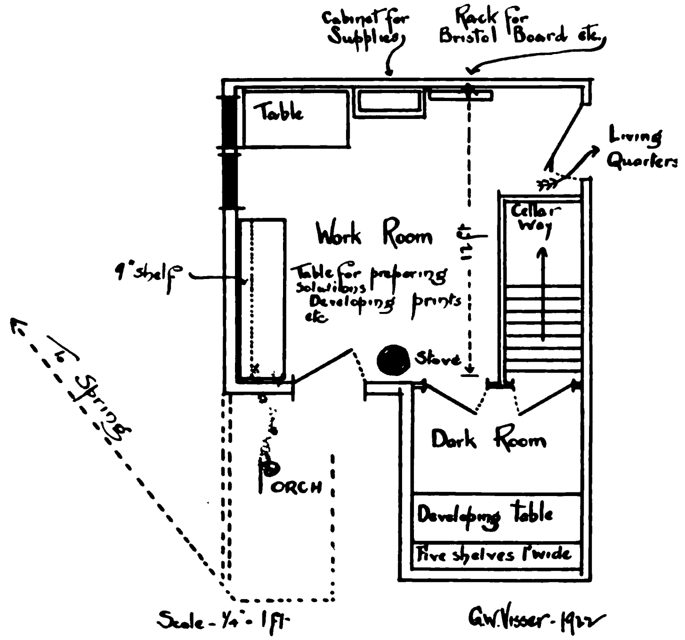
In conclusion, although I have numbered many retouching implements and materials, I have not exhausted the list. But from those I have mentioned I think the enthusiastic retoucher who has not yet reached the highest pinnacle of the retouching art will be able to select a useful outfit. — *The British Journal of Photography.*

OPERATING A COMMERCIAL FINISHING PLANT IN THE WILDERNESS

G. W. VISSER

PERHAPS I had better say that I am the only telegraph operator in a lonely railway station in Northern Ontario. Between the months of May and November, perhaps two trains stop — just for a moment each day. The population of this settlement is six — six people, only — and of the six, two besides myself speak conversational English. I am thirty-six miles from the nearest town and twenty from a post-office. Of course there are no electric lights here, nor running water, yet I operate, very profitably, a complete commercial finishing plant, the capacity of which is five hundred prints a day — all in spare time.

THE WHITE DOORWAY
FRED A. RUTTER
Pittsburgh Salon, 1922



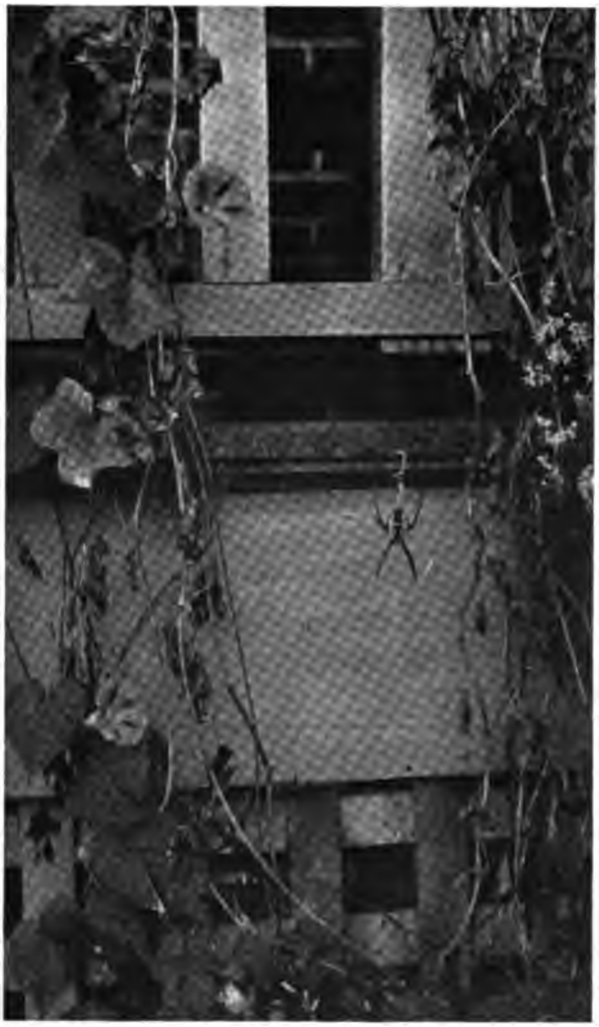
My duties as a railway employee cover eight hours, from four in the afternoon until midnight. With the exception of a month or two during the wheat rush in the winter, I haven't a great deal to do in the company's service. The photographic work keeps me from going crazy. That, perhaps, is an advantage. It also makes money for me. That, perhaps, is a curse.

I acquired my first camera in 1896. It was a gum coupon premium. Made of cardboard and taking a plate 2 x 2 inches, its chief marvel was that it made an occasional picture. It made enough to infect me with the virus, anyway, and the "bug" evidently fell on fertile ground. I soon graduated to a Brownie. The films then in use could be developed in a bright orange light that would hardly be safe for the bromide paper of the present day. And curl — Heavens! how they *could* curl. We used to soak them in a bath of glycerine and water to keep them straight — that helped a little, but did not entirely prevent the trouble.

Looking back over the years I remember using a succession of cameras, each a little better than its predecessor: Premos, Kodaks, Thornton-Pickards, Sandersons, then Kodaks with anastigmatic equipment and Compound shutters and finally the Graflex with its Ic Tessar and an 8 x 10 field camera with Protar lens and a battery of filters and supplementary lenses.

My entry into the semi-professional field in this out-of-the-way place was caused partly by the love of the work and more because I needed the money. I began in October, 1916. I had spent two years working along the north shore of Lake Superior and had accumulated some fine negatives taken with a No. 1 Special Kodak. I had pictures of deer and moose, Indian camps and a few trapping pictures. The thought occurred to me — why not enlarge them, make them up into calendars and put them on the market a month before Christmas? So I bought a Brownie enlarging box, an assortment of cover paper and bristol board and started. I made an assortment of ten of my pictures, mounted them nicely, with date pad, and sold the lot for $5.00. I disposed of twenty-one sets in a month. At the time of year when I put this assortment on the market, there are many more trains than in the summer. Many of them stop at this station for orders. I never lost an opportunity to place my calendars before prospective customers among the conductors, brakeman and engineers. Soon they began leaving films for development. I could deliver their prints in two days or less, whereas, in the nearest town, the stores sent them to Toronto and delivery did not take place for a week.

Business increased and I soon found it necessary to start mixing my own solutions. Gradually I fought the wife out of one room — for finishing — and after a bitter struggle —



AN OPENING IN THE VINES
JOHN PERRING
Pittsburgh Salon, 1922

in the dead of winter — I captured a dandy pantry adjacent to the first room, for a darkroom. She began to see the hopelessness of her cause and with hardly a flat iron I secured one more room for my daylight enlarging plant.

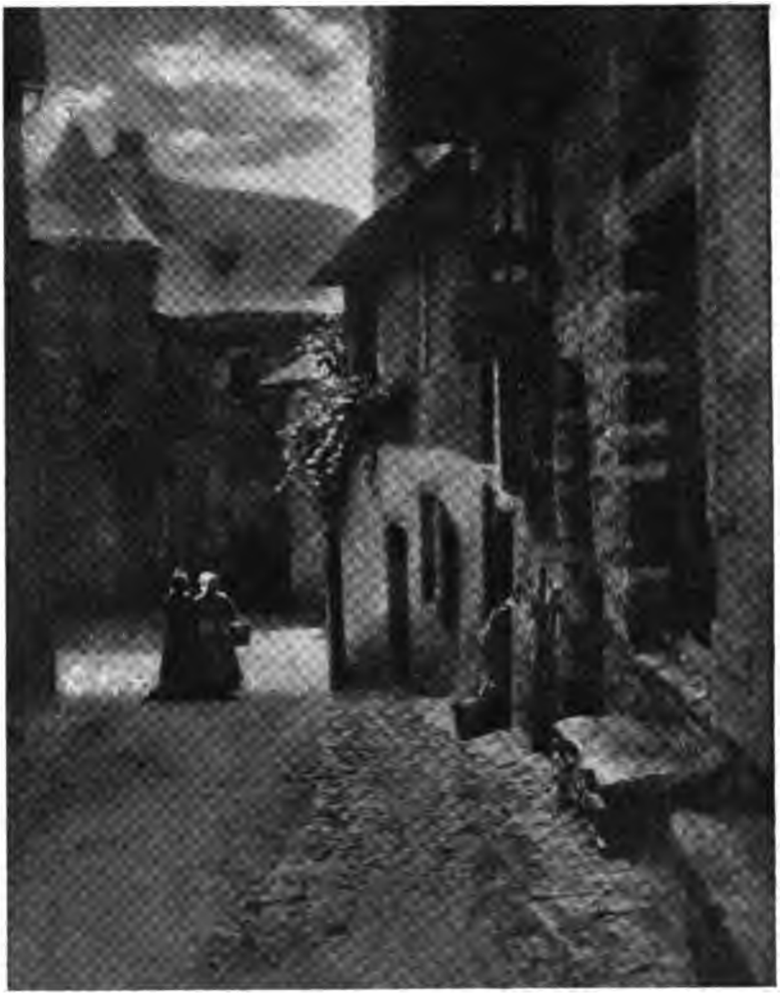
In contemplating the handling of any amount of finishing, I had three major problems to deal with; light, water and temperature. Temperature, perhaps, was the greatest, for in this northern country the mercury sometimes descends to sixty degrees below zero. Railway stations are not very warmly constructed and are heated only by coal stoves. There was only one practical kind of light — daylight. I simply had to learn to gauge its fluctuations and expose prints and enlargements accordingly. *That,* I soon accomplished, and now often run two hundred prints without a mistake in exposure. The only water fit for photographic uses here is that from the spring-hole, two hundred yards from the building. It is impossible to construct a well nearer, on account of the rocky formation of the site. I surmounted the water difficulty by using "Hypono." During a heavy day's run, i. e., four to five hundred prints, I need carry only about six pails of water, and that isn't nearly as bad as it sounds.

The question of developing films, especially in winter, was a difficult one. Often having as many as fifty rolls, the tank method seemed to be the only way. My darkroom, however, would not accommodate a stove and at night, with fires banked, solutions in a tank would become so cold that it would take a very long time to warm them. Many mornings would find them frozen. In fact, so much was against the tanks that I abandoned the idea. Instead, I learned to develop seven rolls at a time in a tray. I can develop fifty rolls an hour without any great haste. The rolls are first numbered in the usual manner. The hypo is in a ten quart preserving kettle. I have an 8 x 10 tray near by full of water at 60° F. The developer is prepared — I use the AMERICAN PHOTOGRAPHY "Thermo Chart" and the pyro-soda developer. Shutting the door of the darkroom, I quickly strip the protecting paper from seven rolls and one by one place them in the tray of water, allowing them to roll up. I roll them up and down until they are thoroughly wetted and do not stick at any point. Next I transfer them one at a time to the developer. In order that development may proceed evenly, after I get three rolls in I give the first two a roll up and down, put in the fourth and roll one, two and three, put in the fifth and roll one, two, three and four and so on. It works out so that when number seven is in, number one only requires about another minute. As they are developed they are given a rinse in the water tray and thrown into the hypo. There is so much hypo that an occasional stir with a paddle insures even fixation. After the "run" is completed, the films are rinsed out of the hypo, given three or four minutes in Hypono, then three rinses in cold water and hung up to dry. So much for that.

Referring to the plan of the printing room, the reader will note that the two windows are only about six inches apart. The upper halves of these are covered with a double layer of black table oilcloth. On the window at the end of the table, shown in the plan, I hang a focusing cloth, the other one I cover with orange fabric. Both of these coverings are attached to the top bar of the lower sash and when not in use are simply rolled up. When the room is required for printing, only a few seconds are needed to prepare it.

I use an 8 x10 frame and construct my own masks out of thin cardboard. They are absolutely non-slipping and give an even white margin either 1/4 inch or 1-8 inch.

Taking all the films of a size, I put a quantity of the paper in the left hand compartment of the drawer, which is divided into three sub-compartments for hard, normal and soft emulsions respectively. With the negative in place under the mask, I place the paper, number it with the order number, close the frame, tilt it up on end and switch the focusing



UZERCHES: "IL FAIT UN BEAU SOLEIL"
DR. A. D. CHAFFEE
Pittsburgh Salon, 1922

cloth to one side for the required length of time. The exposure made, the frame is dropped down, the print removed and thrown in the right hand compartment of the drawer, and a fresh piece of paper taken.

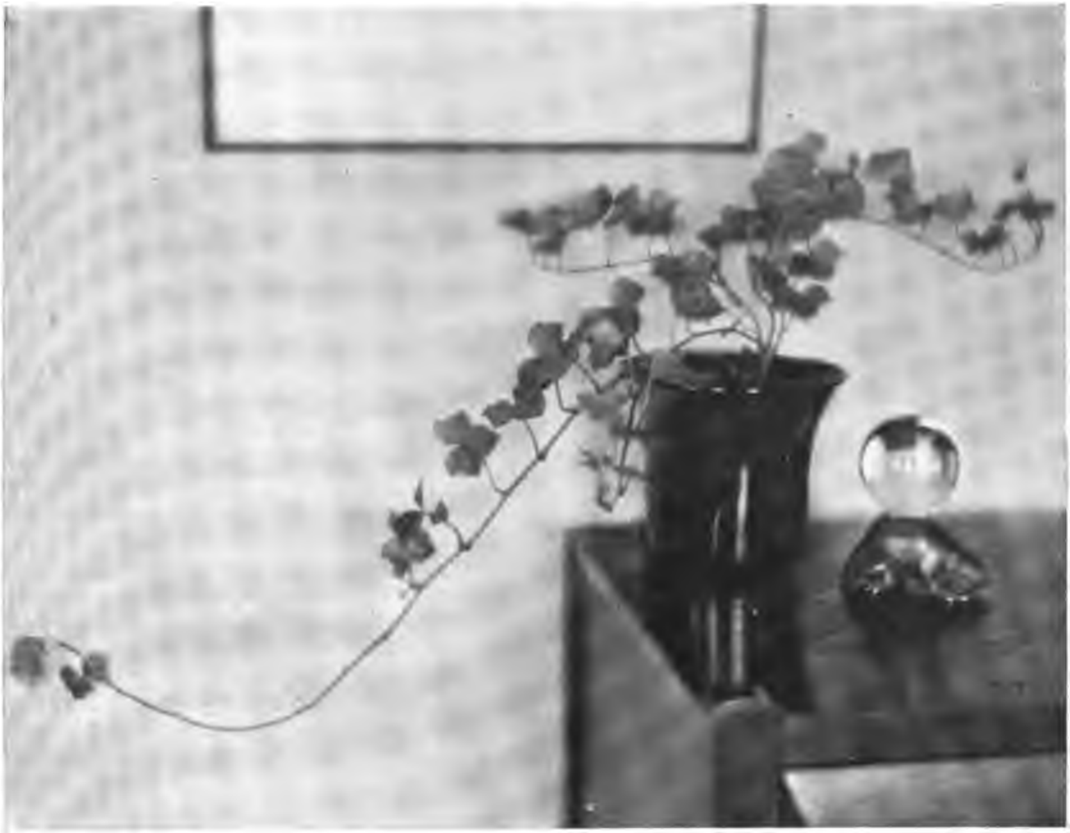
This procedure is repeated until the order is filled. I develop each order as soon as it is all printed and get the prints into the hypo, of which, in this, as in all my operations, I use plenty. As each order goes in, ALL the prints therein get a work over. When the printing and fixing is all done, the prints are rinsed, "Hyponoed," given a wash through three or four changes of water and put on the glossing boards. In this district glossy prints are preferred. It suits me finely, as the drying and straightening of matte paper would be a difficult task without the aid of modern dryers.

My enlarger is a simple daylight type, set at an angle of about forty-five degrees to the window so as to obtain a clear sky lighting. It is capable of enlarging up to 24 x 24 inches. As I said before, the enlarging apparatus has a room to itself. The upper part of the window is covered with two layers of orange fabric, which gives a safe and an ample illumination for developing bromide paper. Enlargement is fast. At noon, using *f*:16 and enlarging from 2 x 3, to 8 x 10, twenty seconds gives a snappy print from a normal negative. The apparatus, of course, allows of all the tricks of that branch, such as dodging diffusion printing, and so on. I made my own 26" x 26" trays out of half inch boards and lined them with table oilcloth. It needs changing occasionally, but I find the trays quite satisfactory and much cheaper than those sold.

One day three years ago I received an order for an enlargement in colors. I sent it to Toronto for coloring and when it came back, I decided I could do as well myself. Accordingly I bought a set of Eastman Photo Tints and went at it. At first it was heart-breaking — so many enlargements were spoiled, but after a time I succeeded in turning out salable work. I then tried the transparent oil colors and after a years' practice succeeded in turning out 10 x 12 enlargements, of my own subjects, that sold easily for $8.00 each. Since then, I have made some fine copies of Art Gallery subjects in Toronto and elsewhere on panchromatic plates; enlarged and colored them in oils, and have sold a number at rather fancy prices. It is mighty interesting work and I am planning, if possible, to develop a market for that class of work that will allow me to devote all of my time to it.

No doubt some of you will say, as you read this, "if he can do so well, why doesn't he get out of the bush." Really, I do not know why. I have lived so long in it that neither my wife or myself would be altogether happy elsewhere. There is no logical reason why people stay in these lonely places — unless you understood the wild, I could not explain. Robert W. Service, the Canadian poet, in "The Songs of a Sourdough," explains it about as well as can be done. There is a peace and a contentment here that, to us at any rate, cannot be duplicated elsewhere. So here we stay nine or ten months of the year — and spend the other two in travel, hither and yon, and are always glad to get home.

It is often required to remove films from spoilt plates for printing from roll-film negatives, trimming prints, cover glasses for slides, passe-partout, and other purposes when it is necessary that the glass should be quite free from scratches. It will be found that if the spoilt negative is taken from the fixing bath, and put straight aside to dry without any washing, when dry the film may be easily stripped from the glass by one corner. Old negatives may be given a hypo bath, and treated in this way with the same result. The above, though simple, is quite effective and is one of the easiest ways of doing this job, and certainly has econcmy in the materials required to commend it. — *Amateur Photographer.*



IVY AND OLD GLASS
CLARA E. SIPPRELL
Pittsburgh Salon, 1922

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[illegible] beautiful [illegible] scatter them [illegible] means of the [illegible] that is well [illegible] them an count- [illegible] that would make [illegible] catch them.

[illegible] been able to see any [illegible] vicinity. I took the [illegible] out for the Dells of [illegible] Wisconsin [illegible] miles from home [illegible] a lot of fine [illegible] day with a blue [illegible] summer — and [illegible] the land. About [illegible] hunting grounds [illegible] had rattled [illegible] and after completing [illegible] the running board [illegible] wandered [illegible] the autumn woods [illegible] that the sun [illegible] extreme [illegible] then why would [illegible] So I sat [illegible] a color filter [illegible] trigger.

[illegible] spent the rest of the day at the [illegible] pictures which I imagined were [illegible] exceptionally fine, but they were [illegible] they [illegible] to me as [illegible] of the [illegible] You may [illegible] with it [illegible] since it makes [illegible]

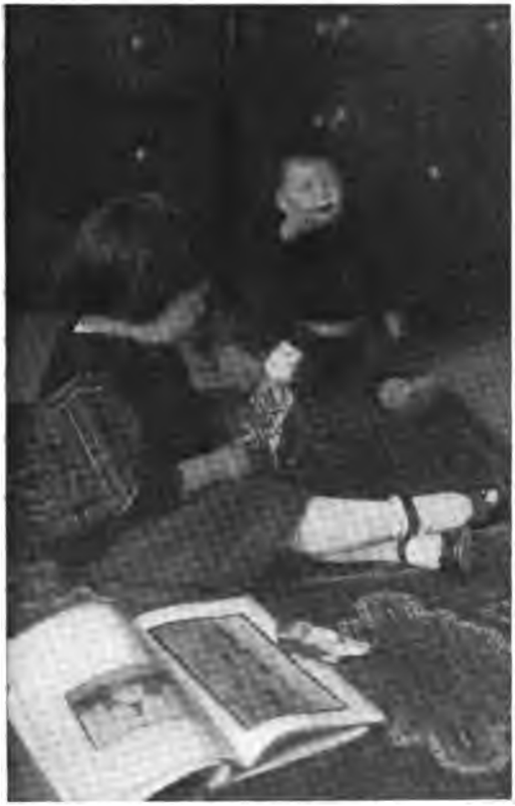
THE LITTLE FARM G. A. CHATTERTON

nizant of the enjoyment of the original scene I consider it a success. I dare say that many thousands of tourists (most of them with cameras) from probably every State in the Union have passed this same spot, and I doubt if any ever thought of photographing this subject, unless he had a blowout, and then the chances are he would not have sat down to rest. I merely mean to show that by accident I found a picture that pleased me, and couldn't find any when I was looking for them, because most of the time we go about blind to the beauties of nature.

Here is one way to achieve a better perspective: acquire the habit of picture hunting. One doesn't even have to have a camera with him. Let the eye be the lens, the brain the developer, and the print the picture on the mind. A good book on pictorial composition contains the essential rules of the game, and the imagination will do the rest. On tedious train trips, or auto tours or hikes afoot, the field is unlimited to play this game, and thereby the journey is made much more enjoyable. Take all the scenes that one passes, search out the pleasing lines and planes, look for the right atmosphere — in short, compose the picture in the mind. By doing this we will find ourselves tarrying here, going out of our way there, perhaps, but we will have lots of fun on the way.

Routes we take every day sometimes become monotonous, if we can discover nothing new of interest. Last winter, every morning on my way to work I passed along a lake where near the shore there were three abandoned ice boats frozen in the ice and snow, forming a very pleasing triangle bisected by the long reflection of the rising sun shining through the frosty morning mists, and every day the picture changed. I toted my camera out several times, but the lighting was unfortunately poor when I was prepared, so I didn't get the picture on paper. However, I had a great deal of enjoyment from that scene, and it is one that is preserved in my memory as a pleasant thought.

A while ago I took a trip with several friends into the great north woods to hunt ducks and muskellonge and pictures. We got numerous ducks, a few "muckies" and quantities of photographs; so many of the latter, in fact, that I made up quite a complete book of the trip for each of the party, which is highly prized by all who went. Among the collection is one picture which the others pass by, and which I consider my biggest catch. It is of a gigantic lone pine tree standing among the dead stumps of the cutover forest, left for some unknown reason by the fatal march of the woodsmen of a generation ago. I have enlarged the negative by means of a soft-focus lens, and have the print hanging in my den as an expression of one prominent phase of the north country. Most of my friends say that it is "kind of dim," and ask why I don't put up the one of the big string of fish, but I believe it means much more than a string of fish or a piece of string. I am just conceited enough to think that the others "don't get it," and I wonder if they got the enjoyment out of



HER FRIEND W. G. TAKAGI

the outing that I did.

A little training in the line of the pictorial can do as much for happiness as the study of music or any of the arts. All the time, anywhere, we may practice, and the more we try to appreciate the beautiful the more we can sincerely say: "Ain't Nature grand!"—G. A. CHATTERTON.

HER FRIEND

The chief fault in this very interesting portrait study is that there are too many different objects included in the picture and these scattered highlights make the picture "spotty." It is necessary, of course, to include some other dolls and toys in order to carry out the idea of the story, but in this respect there is scope for the exercise of ingenuity and skill in suggesting these discarded toys without making them too obvious. We think the large book in the foreground is quite unnecessary and this is the chief contributing cause of the lack of simplicity. This might very easily be remedied by trimming off a good slice at the bottom of the picture which would remove all, or nearly all, of the open book. If this were done the figure of the little girl would gain in prominence and the picture would tell its story far more effectively. Made in California with a 5 x 7 King camera fitted with a Zeiss anastigmat lens of 12 inches' focal length, full opening, light from one window, 3 P. M. in November, exposure 2 seconds, plate developed with M. Q., print on Artura Iris C.

USING ROLL FILMS IN A PLATE CAMERA

In AMERICAN PHOTOGRAPHY for January, 1920, there is an interesting article entitled, "Using Plates in a Roll Film Camera," by A. M. Candy. As stories sometimes start, "that reminds me" of an experience of my own. While away from home and accompanied by the two cameras which usually go where I do, a roll film Ansco V. P. No. 3, 2¼ x 3¼, with Tessar *f*:4.5 and a 3¼ x 4¼ plate camera with double extension bellows (equipment selected after counsel with the editorial staff of AMERICAN PHOTOGRAPHY several years ago and found to be exactly suited to my individual needs), I had used more plates than I expected to and my supply was exhausted. I found a coat of arms which I wished to copy, and that job demanded a camera with double extension bellows and focusing screen. I tried to buy more plates, but there were no quarter plates to be had in that town and I did not have time to wait for some to be sent to me. I was up against the proposition of doing the work with the materials at hand or not doing it at all.

I first took two of my poorest glass negatives and with hot water and Gold Dust washing powder I washed the glass absolutely clean. I then took a roll of film and cut off two pieces about 4 inches long and loaded these pieces of unexposed film into the plate-holder by placing the film back of the cleaned glass, doing this in an improvised "darkroom." While the pieces of film would curl up if used alone, by placing the glass over them, they kept the film out smooth and straight. I was then ready for business and used my plate camera just as if I had plates in my plate-holder, except that after getting exact focus, I moved the lens backward the thickness of the cleaned glass to compensate for the film being back of the glass instead of in front of it. My copy of the coat of arms was all I could have secured had I used a regular glass plate and the "day was saved." Since the above experience I have used pieces of roll film 3¼ x 10 in an old 8 x 10 view camera to make a negative for a double postcard, as I had no large plates on hand and only that one demand for the double postcard size negative.

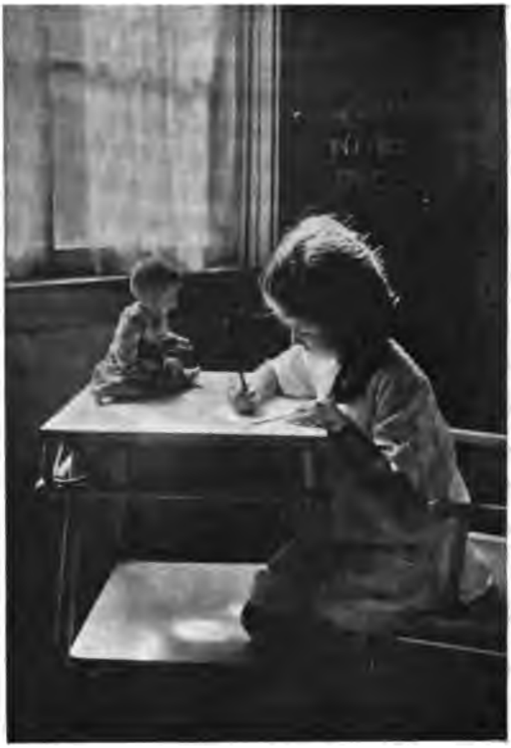
In cutting the film I found it worked well to unroll the roll to the point where the film is secured to the paper, then fasten that end of the film to a board or shelf with a couple of push pins, then unroll some more film and cut off the length desired. I found it more convenient when using a piece of film 10 inches long to fasten the film to the back side of the cleaned glass with bits of gummed paper, laying the glass down first, then laying the film on it with the sensitive side down and after securing the film to the glass, turn the glass over and load it in the plate-holder. When I developed the 10-inch pieces of film, I used my film tank by rolling the film inside the apron of the tank, while in the darkroom, but the small pieces of film can be developed in a tray. — G. Myron Allen

DEAR SANTA CLAUS

This is a picture that is unusually attractive both on account of its subject and because of the way in which the subject has been treated. The lighting is particularly good and the child appears to be entirely natural and at ease. The only modification we would suggest is to trim half an inch from the top of the picture, as there is just a little too much space at the top. We do not think the lettering on the background is altogether to be commended. To use direct sunlight in lighting a figure needs considerable skill, but that it can be done effectively is clearly shown by the success with which it has been done in "Dear Santa Claus." Made with a Cycle Graphic camera, 5 x 7, Goerz Dagor lens of 6 inches' focal length, used at *f*:12, sunlight at 2 P. M. in June, exposure 2 seconds, Cramer Iso Non-Halation plate, developed with Adurol, print on Cyko Professional Studio.

TELEPHOTOGRAPHY

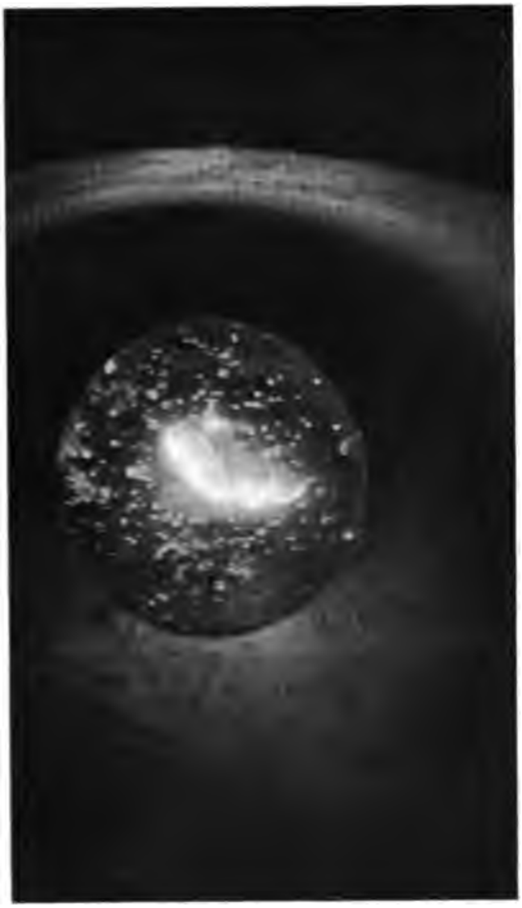
The telephoto attachment is a negative lens with photographic corrections, which is mounted behind a good photographic lens in a telescopic tube with appropriate marking, showing the separation of the telephoto element from the lens itself. Every time we change the separation, we effect a change in focal length from three times the focus of the lens up to eight or ten times. Remembering the image size relations, we have now possible the making of large images of distant objects, which will show up on the ground plate from three to ten times as large in any direction as the regular lens itself.



DEAR SANTA CLAUS AMANDO CESPEDES

Some of you may ask, "Why use a telephoto lens when a long focus simple lens would do?" There is a further advantage in the telephoto system in the fact that the camera extension is not much more than the ordinary photographic lenses and very long focus lenses, even very slow in speed, would represent a considerable expense.

Telephoto work demands absolutely perfect technique, and the use of color sensitive material, ray filters, etc. Every defect of the positive lens is going to be magnified from nine to one hundred times according to the setting of the telephoto, so that you can easily appreciate the limitations of the apparatus.



HOW CAN SUCH THINGS BE TAKEN?
HERMAN BOERS

There are fixed telephoto lenses where the lens has one magnification only and the advantage of a short back focus with a very long equivalent focus. Such lenses are the Ross Telecentric, the Telar and certain Dallmeyer types.

HOW CAN SUCH THINGS BE TAKEN?

Here is a puzzle picture that, at first glance, is quite mystifying. It is not a photograph of the moon or of the planet, Mars. What is it? We invite our readers to guess what it is. The picture and the explanation of the mystery were sent to us by our friend Herman Boers of the L. Black Company, Detroit, Mich. It is absurdly simple when you know what it is and we wonder how many will be able to find out how the picture was made.

AN ECONOMIC NOTE

At the present time, when everyone is endeavoring to practise economy, not many workers realize the saving that they might effect upon their printing paper by using a slightly smaller size, such as 3½ x 2½ for quarter-plate, quarter-plate for 5 x 4, 5 x 4 or 6 x 4½ for half-plate, and 7 x 5 for whole-plate negatives. Reflection will show that in nearly every case the prints have to be trimmed down to something near this size, or even smaller, and as these trimmings represent so much waste, there is every reason for the course mentioned above. Though the saving may not be very great, it is the parts that make the whole, and here is one way of economizing without, as is so often the case, endangering the ultimate success of our work, which is far from real economy. — *Amateur Photographer.*

THE MERCURY-FERROUS OXALATE METHOD OF INTENSIFICATION

Anyone who has intensified a negative with mercury and ammonia, and then tried to repeat the operation knows that it is not practical. Not only does the negative gain nothing in density, but it suffers from stains or patchiness. There is one modification of mercury intensifier which is not open to this objection, but can be applied over and over again if need be, each application increasing the contrast to a definite degree. This particular process is that in which the bleached image is darkened by means of ferrous oxalate.

The intensification is best carried out by daylight throughout, and should not be put in hand until there is no doubt that the hypo has been completely eliminated. It is a good plan to make sure of this by well washing with water, in the usual way, and leaving the negative for half an hour in a solution of alum. A convenient strength is one ounce of ordinary or potash alum to a pint of water. Hot water should be used to dissolve the alum, and the solution is ready for use as soon as it is cold, and can be poured back and used over and over again, provided it keeps clear. This will not only decompose the last traces of hypo (which should not be present), but will also harden the gelatine, which is desirable.

After the alum the negative may be washed in three or four changes of water, and is then in the best condition for bleaching. It is bleached in a mixture of equal parts of a saturated solution of mercuric chloride and water, three drops of hydrochloric acid being added to each ounce of the mixture. When it is thoroughly whitened right through it may be taken out and washed.

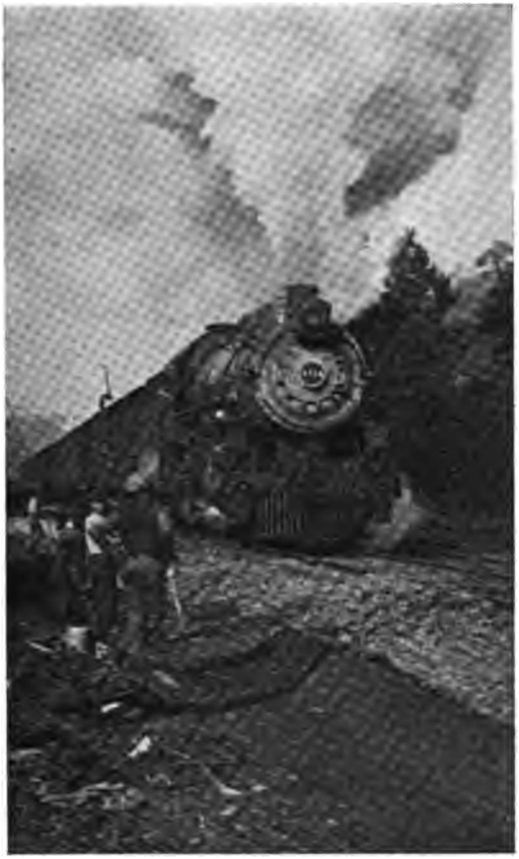
The intermediate washing should be done with very dilute hydrochloric acid in place of water, say, one ounce of acid to eight or ten pints of water, and after half a dozen changes in this the negative should be left in distilled water for five minutes, well drained, and put into a fresh bath of distilled water for the same time. This is important, as, without it, the.oxalate solution will react with the salts of lime always present, more or less, in ordinary water, and will form calcium oxalate, which is insoluble, and will leave stains in the film.

After washing the negative is put into ferrous oxalate solution to darken. This is made by mixing a saturated solution of iron sulphate with a saturated solution of potassium oxalate. The iron must be added to the oxalate, and not *vice versa*, or a clear liquid will not be obtained. Two drams of the iron solution, not more, should be taken to each ounce of the oxalate. In this the image gradually darkens, and the negative should be left until there is no doubt that the darkening action has gone right through, No harm will result if it is left in longer than is absolutely necessary.

Washing completes the process. For the reason already named the negative should be washed in three changes of distilled water, five minutes in each, after which it may be given a rinse in plain water, and set up to drain and dry. — *Photography*.

THE FAST FREIGHT

The representation of motion by photography is by no means an easy task. An artist often takes liberties with actual facts and suggests motion in ways that are not possible in photography. In making a picture of a train traveling at a high rate of speed, the artist would suggest motion by means of the smoke and dust caused by the passing train and very likely he would exaggerate these in order to accentuate the idea. If a photograph of a moving train is taken with a short enough exposure to "stop the motion," we shall nearly always find that there is little or no indication that the train was moving. Even if steam is issuing from the funnel it is not entirely convincing, because that often occurs when the train is standing still. The photographer may follow the example of the artist and take liberties with actual facts in order to suggest motion and one way to do this is to give an exposure that does not stop the motion but that gives a slightly blurred image of the moving object. This must not be overdone and the blurring should be only very slight. In Mr. Gottscho's study of "The Fast Freight," a slightly longer exposure might have made the picture more suggestive of speed. As it is the train appears to be stationary and if it were not for the title it would be hard to guess whether it were moving or not. This print, 3½ x 6, was enlarged from a part of the original negative measuring only ⅞ of an inch by 1½, a Premoette camera was used with an R.R. lens of 5 inches' focal length, stop U. S. 8, bright light at 9 A. M. in June, exposure 1-25th second.



THE FAST FREIGHT S. H. GOTTSCHO

HANDLING ULTRA-RAPID PLATES

When the dull winter weather comes along, photographers naturally look for some means of keeping their exposures short. The first thing they turn to is an ultra-rapid plate. Those who have not been accustomed to the handling of very fast plates, however, sometimes meet with disappointment. And yet, there is really no reason for disappointment if a little care and common sense are used in the darkroom. It is only reasonable to expect that certain modifications in treatment will be necessary when a very fast plate is used instead of one of moderate speed.

The first thing is to see that the darkroom lamp is safe. A light that is comparatively safe with an ordinary plate may hopelessly fog a very fast plate. It is a good plan to use as little light as possible, especially when loading holders and when taking the plates out of the holders and putting them in the developer. It is during these operations that the plates are most likely to be affected by the light, because all plates are more sensitive when they are dry than they are after having been in the developer.

It sometimes happens that, even with the fastest plates, there will be underexposure in dull weather. In cases of this kind the photographer has to get the most possible out of his plates. He has to get all the detail he can without getting harshness. The best way to do this is to develop in a tank, or, if a tray is used, to dilute the normal developer with an equal quantity of water and to prolong development. This method gives far more detail in the shadows, it improves the gradation, and it does not clog up the highlights.

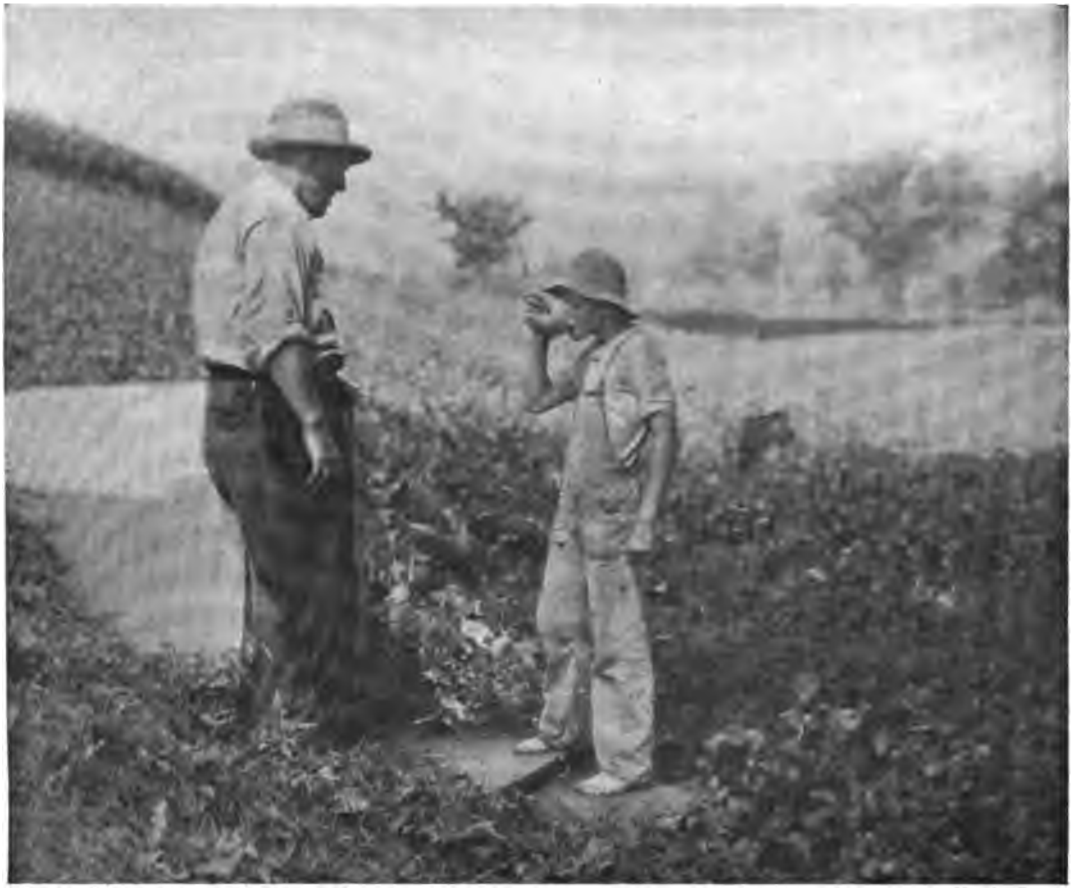
The temperature of the developer is another important matter. Some professionals never use a thermometer. These men would find that a few cents spent on a thermometer would prove one of the best investments they ever made. The best average temperature for the developer is 65°; in no case should it drop below 60°. It is quite impossible to get uniform results with fast plates, or indeed, with any plates, if one batch is developed in a solution at 70° and another in a solution at 55°.

It should not be overlooked either, that fast plates require more time for fixing than do those of moderate speed. It is a mistake, when using any brand of plates, to take them out of the fixing bath immediately after the milky appearance has disappeared from the back, but with ultra-rapid plates it is more necessary than ever that this mistake should be avoided. Fixing should be allowed to go on for at least four or five minutes after all the visible silver has disappeared.

An ultra-rapid plate is a real help to professionals at this time of the year. Such a plate as Seed 30 enables operators to get negatives of restless sitters on dull days, when with a plate of slower brand it would be quite impossible. And the Seed Graflex is also being used to excellent advantage where even greater speed then the Seed 30 possesses is essential. For portraiture, however, the regular Seed developer, not the contrast developer, should be used for the Seed Graflex. The fast plate is more sensitive to light, therefore a safer light, or less light, should be used in the darkroom. It is capable of building up a good negative with a very short exposure, but the negative image, with all its shadow and half-tone, cannot be rushed up in a harsh, strong developer. Seed 30 and Seed Graflex are thoroughly reliable plates; one batch does not differ from another in speed, in fineness of grain, or in scale of gradation; but it is impossible to get uniform results if the developer is at a temperature of 70° for one batch and at 55° for another. — *Photo Digest.*

WAITING FOR THE DIPPER

One of the most desirable qualifications of a genre picture is naturalness of pose and expression. In fact, we might say that this is essential to its success and that without it the picture is a failure. This quality Mr. Bradford has obtained to perfection in his most interesting study, "Waiting for the Dipper." Both figures are delightfully natural and appear to be entirely unconscious of the fact that there was a photographer near them. It is not always necessary, in order to secure a good likeness, to show the face and features clearly. The face of the man in this picture is in shadow and he is turned away from the camera, yet there is a lot of character, individuality and personality in the attitude and in what we can see of the face. We feel sure it is a characteristic likeness. The boy is also perfectly natural and is really "on the job." This quality alone makes this picture a successful one, quite apart from its excellent technical handling. Made with a 4 x 5 Graflex camera, Euryplan



WAITING FOR THE DIPPER — W. R. BRADFORD

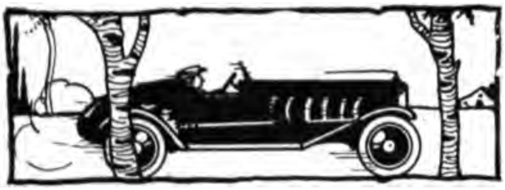
lens of 7 inches' focal length, used at *f*:5.6, bright light at 3 P. M. in August, exposure 1-50 second, Eastman Portrait film developed with Duratol in a tray, enlargement on Instanto Soft Matte.

JUDGING THE DENSITY OF PANCHROMATIC PLATES

Talking with a photographer some time ago, we were somewhat surprised to learn that he considered it a difficult matter to develop a panchromatic plate satisfactorily unless tank development was adopted, which he was averse from doing. His idea was that it is a matter of more or less difficulty to judge of the density of the negative in the very feeble light of the darkroom. It should be pointed out, however, that this difficulty is more imaginary than real. Our own plan is to handle the plates as far as possible in complete darkness, when loading or commencing development; when this operation is judged to be about half complete, there is certainly no harm in examining the plate by quite an ample safe light, for by that time the emulsion is very greatly desensitized, and there is little fear of fog. We do not wish to infer that liberties may be taken with panchromatic plates in this direction, but rather to point out that provided reasonable care is taken, no harm will result in exposing the plate to safe light for even longer than the average photographer takes to judge the density of a negative. — *B. J.*

TELEPHOTO HOODS

Much of the trouble due to reflections and flattening of contrast in telephoto exposures may be obviated by a lens hood. With telephoto exposures, this hood may be cylindrical and quite long. The use of a hood makes a marked improvement in results.



THE PHOTOGRAPHIC REVIEW

E. J. Wall, F. C. S., F. R. P. S.

The Use of Permanganate. — H. C. Inskeep summarizes the various uses of potassium permanganate, from which it would seem to be well worth a place in the darkroom. For reducing negatives the following may be used:

Potassium permanganate, 5% sol.	25 ccm	¼ oz.
Sulphuric acid, 10% sol.	62.5 ccm	5 dr.
Water	1000 ccm	10 oz.

Apply this to the dry negative, wash immediately and again dry. By repeating this procedure, considerable softening of contrasts is obtained. Fairly even reduction may be secured by diluting the above with 5 times its volume of water. As a stain remover, bleach the negative in potassium bichromate and hydrochloric acid and wash till the yellow stain is gone, then immerse in a 10 per cent solution of permanganate for from 2 to 10 minutes; any brown stain can be removed with 10 per cent solution of sodium bisulphite; wash for a few minutes and then redevelop. Another good stain remover is:

Potassium permanganate, 10% sol.	5 ccm	50 minims
Salt	12.5 g	¼ oz.
Glacial acetic acid	50 ccm	1 oz.
Water	1000 ccm	20 oz.

Wash for a short time after immersion in the above, and transfer to a 5 per cent solution of potassium metabisulphite, until the bleached image is quite white when examined through the glass. Redevelop with any non-staining developer. If the negative has not been dried it should be hardened in a 0.2 per cent solution of chrome alum. As a bleacher for sulphide toning the following is excellent:

Potassium permanganate	1.25 g	6 gr.
Hydrochloric acid, 10% sol.	1000 ccm	10 oz.

This should be made just before use, but the permanganate can be kept in a separate stock solution The prints, after bleaching, may be transferred direct to the sulphide bath, which should not be stronger than 2 grains to the ounce. If there is any brown stain a 1 per cent solution of potassium metabisulphite will remove it. If the color of a sulphided print is unsatisfactory, it may be rebleached in the above bath, and a second application of the sulphide, half the above strength, will give a good color. Permanganate may also be used to improve the color of development prints, particularly enlargements. The print should be bleached in:

Potassium permanganate	1.25 g	6 gr.
Sulphuric acid, 10% sol.	8 ccm	40 minims
Salt	6 g	30 gr.
Water	1000 ccm	10 oz.

After bleaching wash the print for 10 minutes and redevelop in strong daylight with an amidol developer without bromide. As a hypo eliminator permanganate is excellent; a few drops of a stock solution should be added to water to give it a pink tinge, and the negatives or prints immersed in it. As soon as the color disappears, the solution should be thrown away and fresh applied, this being repeated till the pink tinge persists. To clean the fingers the permanganate, salt and acetic acid bath should be used, and any brown stain can be removed with bisulphite. (*Brit. J. Phot.*, 1921, **68**, 339). The only precaution to take is to use distilled water only for the stock solution and keep it in the dark.

A New X-ray Plate. — The Imperial Dry Plate Co. has introduced a new plate for radiography, which is coated first with a nearly pure bromide emulsion which has been so hardened that it will stand several hours immersion in water at from 43° to 50° C. (110° to 120°F). On this film is coated another containing phosphorescent calcium tungstate suspended in soft gelatine, which melts at about 35° C.(95° F.). After exposure the plate is immersed in water at the latter temperature for a minute or two, which dissolves the tungstate emulsion, and then developed in the usual way, using a rather stronger developer than usual and for a little longer time to allow for the water absorbed by the gelatine. These plates are said to be from 15 to 40 times faster than the usual X-ray plates. (*Phot. J.*, 1921, **61**, 158).

Solvents for Pyroxylin. — J. Rheinberg suggests that for some processes it is an advantage to use a single solvent, or two with more similar boiling points than ether and alcohol, and proposes methyl alcohol. This, however, gives an opalescent film, but the addition of ethyl alcohol up to 50 per cent remedies this, and makes the film denser and less porous (*Phot. J.*, 1921, **61**, 120). T. Sutton used an ethyl alcohol solution of pyroxylin in 1862, and called it "alcolene." The use of methyl alcohol dates back to J. Schlossberger, 1849. The solubility of the nitro esters of cellulose in methyl alcohol depends to a great extent on the degree of nitration, and the lower this is the less the solubility as a rule.

Amidol-Pyro Developer. — J. R. Hall strongly recommends the following developer as having all the properties of amidol, yet giving an image of the usual pyro color: —

Potassium metabisulphite	1 g	5 gr.
Sodium sulphite, dry	42 g	210 gr.
Amidol	5 g	25 gr.
Pyro	2 g	10 gr.
Potassium bromide	1 g	5 gr.
Water	1000 ccm	10 oz.

To this is added, just before use:

Caustic soda	1 g	5 gr.
Water	1000 ccm	10 oz.

This can be used for plates and papers, and for a number of plates without staining. The Watkins factor is about 10; used with a higher factor very contrasty results suitable for line work are obtained. (*Amat. Phot.*, 1921, **51**, 391). Loebel (*Rev. Sci. Phot.*, 1904, 214) first suggested the use of an alkaline amidol developer, but used too little caustic soda to form the true phenolate. Valenta (*Jahrbuch*, 1905, **19**, 122) proved that by using enough caustic soda to neutralize one molecule of the hydrochloric acid in the amidol, an excellent working developer was obtained, that gave very soft delicate results. His formula was:

Sodium sulphite	5 to 15 g	35 to 105 gr.
Amidol	5 g	35 gr.
Caustic soda	1 g	7 gr.
Water	1000 ccm	16 oz.

This keeps quite clear during development and does not stain.

Warm Tones on Development Papers. — A. H. Hall has tried out the Kodak method of obtaining warm tones on development papers by partial redevelopment of the bleached print prior to sulphiding, and gives the following tables of the results obtained. The prints were bleached in the usual ferricyanide and bromide mixture, then washed for 90 seconds in running water and immersed for various times in the following developer, as recommended for the Wellington papers:

Metol	2 g	14 gr.
Hydrochinon	5 g	35 gr.
Sodium sulphite, dry	10 g	70 gr.
Borax	20 g	140 gr.
Water	1000 ccm	16 oz.

Then the prints were rinsed for 30 seconds and sulphided in a normal sulphide solution.

Apparently the scale of tone of the original prints is well retained. (*Brit. J. Phot.*, 1921, **68**, 775).

Print No.	Time in Developer	Color on removal from Developer	Resulting color of finished print	Remarks
1.	Till blackened		Black	Normal print.
2.			Warm black	Full strength developer used and no sulphiding
3.	30 mins.	Chocolate red with tinge of violet.	Warm black to brown black	The most useful range
4.	20 mins.	Chocolate red	Cool sepia	
5.	15 mins.	Red	Mezzotint sepia	
6.	12 mins.	Lighter red	Sepia	
7.	9 mins.	Pale red	Warm sepia	
8.	6 mins.	Very pale red	Warm sepia with distinct tinge of yellow	

Print No.	First Bath	Second Bath	Third Bath	Remarks
9.	Presulphide for 5 mins.	Bleach	Sulphide	Intermediate between 10 and 11
10.	Bleach	10 seconds in sodium carbonate	Sulphide	Most yellow
11.	Presulphide for 5 mins.	Bleach	10 secs. in sodium carbonate	Least yellow

Darkroom Dodges. — G. C. Weston gave an excellent résumé of little dodges that he used in practical work, some of which are new and some old; but they are worth recording: To prevent the fracture of negatives by the warping of printing frames; gluing a strip of square black soft rubber all round the bottom of the rabbet gives a soft resilient bed. Two pieces of wire, each of them bent into an eye at one end and into a hook at the other will form a couple of convenient struts by which the frame can be adjusted in a reclining position, or hung up to a window ledge. In printing from a cracked negative, fix the frame on a piece of board suspended by a cord, and give the whole a twist; if the cord be long enough it will keep on turning and thus diffuse the light. Always use bottles with lips for liquids. Place labels on bottles lengthwise, there is less chance of the liquid running over it. (Every chemist always takes hold of a bottle so that his hand covers the label, thus preventing this little trouble entirely). Labels placed upright form convenient measures of the height of a given quantity of liquid. Tracing cloth may be used for labels and the use of waterproof ink enables them to be easily read in the darkroom by transmitted light. Paraffin wax poured over labels waterproofs them. Waxed corks are better than stoppers, and for corrosive liquids thin rubber sheeting, as used for cycle tire punctures, should be stretched over corks and tied into a bunch at the top. Paint the under side of measures with white enamel, they can then be easily seen in the darkroom. A cork lining on the shelf and its edge is useful and better for pinning things to than hard wood. Plasticine may be used for levelling anything on a bench and it forms a perfect airtight luting for corks or stoppers. In enlarging, make the easel so as to form a kind of tray, and cover it with a gelatine composition, to which the paper will stick with the slightest pressure. To get even illumination over a surface the two lights, one on either side, should not be placed opposite one another, but one should be slightly higher than the other. (*Phot. J.*, 1921, **61**, 25). For the adhesive compound for the easel I have used for many years the following:

Hard gelatine	66 g	1 lb.
Golden syrup	66 g	1 lb.
Glycerine	100 g	1½ lb.
Chrome alum	1 g	96 gr.
Water	1000 ccm	240 oz.

Soak the gelatine in the water for half an hour, melt in a water bath and add the syrup and glycerine, which should be weighed not measured, and finally the alum dissolved in a little water. Good pale glue may be used instead of the gelatine and Karo corn syrup instead of the other, which is actually a sugar syrup. Allow 9 fld. oz. (250 ccm) to a 16" x 20" area. This takes some time to dry, although actually it never does dry, but always remains tacky. Paper laid on this will stick flat forever if rubbed into contact with a soft handkerchief or roller squeegee. The coating will last for months even with daily use. Coated on card, this forms an excellent carrier for films in the plate holders.

The Carbro Process. — This is apparently the old ozobrome process under a new name and somewhat simplified, as worked out by F. Garon. Two stock solutions are required:

No. 1

Potassium bichromate	50 g	1 oz.
Potassium ferricyanide	50 g	1 oz.
Potassium bromide	50 g	1 oz.
Water	1000 ccm	20 oz.

No. 2

Glacial acetic acid	45 ccm	1 oz.
Hydrochloric acid, c.p.	45 ccm	1 oz.
Formaldehyde, 40% sol.	1000 ccm	22 oz.

For use these are diluted, No. 1 with 3 times the volume of water, and No. 2 with 32 times the volume, and this last must be made fresh each time of using. Any good bromide print can be used and it should be thoroughly soaked in water. A piece of carbon tissue should be immersed in the first working solution for three minutes, drained for fifteen seconds and then immersed in the second or acid bath and left for about twenty seconds. It is then placed on the wet bromide and squeegeed into contact, and left for fifteen minutes; the two should be placed between grease-proof paper in order to prevent unequal absorption of the solution. The two are then stripped and the bromide print placed in a dish to wash, as it can be redeveloped and used over and over again for at least ten times and in some cases fifteen. The carbon tissue should be squeegeed into contact with a piece of single or double transfer paper, which must be previously soaked in water for some time, and the two left for half an hour. Development is carried out exactly as in the carbon process, but the water should be at a rather lower temperature, to begin with at any rate. Variation of results can be obtained by carrying the length of immersion in the acid bath, as a shorter immersion gives greater contrast, while longer gives flatter results; still this is dependent to some extent on the make of bromide paper. Again, longer contact of the tissue and print will give darker prints. The time of immersion in the acid bath varies a little with the different colored tissues, olive brown giving a flat, while sepia gives harsher results. Apparently any surface print can be used, though there will naturally be more difficulty in obtaining perfect contact with rough papers. As regards the sharpness of the result it is obvious that as the basis of the process is diffusion, there must necessarily be some slight sideways action, consequently there must be some slight loss, but very little, and this would only be noticeable in line work. (*Brit. J. Phot.*, 1921, **68**, 327; *Phot. J.*, 1922, **62**, 16). Considering that this process makes one quite independent of daylight and that the results are real carbon prints, it is well worth attention by all. Curiously enough it is stated that development prints are not suitable, but they might be if the image was bromized and then developed.

Oilograph. — Under this name A. Shipley gives a modification of the bromoil process in which a plain gelatine coated paper is used. A good bromide print is soaked in water for 5 minutes and then squeegeed into contact with the gelatinized paper, which has been soaked for from two to two and a half minutes at 16° C. (60° F) in the following:

Pot. bichromate, 10% sol. ..	97 ccm	1¾ oz.
Pot. ferricyanide, 10% sol.	47.5 ccm	¾ gr.
Pot. bisulphate, 10% sol.	4 ccm	30 minims
Pot. bromide, 10% sol....	47.5 ccm	¾ oz.
Chrome alum, 10% sol....	14.5 ccm	110 minims
Water to............	1000 ccm	16 oz.

The print and the paper should be allowed to remain in contact under slight pressure for 20 minutes; then separated and the print washed, after which it can be redeveloped. The gelatine coated paper is placed in water at 32° C. (90° F) for a few minutes and then a relief begins to show, and can be inked up as usual. Either single or double transfer paper can be used for the gelatine-coated paper. (*Amat. Phot.*, 1921, **51**, 63).

Wet Collodion. — W. T. Wilkinson points out that although the wet process is practically dead for the average run of photographers, it is still the mainstay of 90 per cent of photomechanical workers He suggests the following as a great improvement:

Ammonium bromide..........	6.25 g	240 gr.
Calcium chloride.............	2.35 g	90 gr.
Alcohol....................	100 ccm	8 oz.

Dissolve and filter and add:

Ether, sp. gr. 0.725.........	150 ccm	12 oz.

Add this to 750 ccm (60 oz.) plain collodion and allow to stand at least fourteen days to ripen. Sensitize in a 1:8 silver nitrate solution. The plates may be developed as in the old days with iron sulphate, or all the free silver may be washed out and then hydrochinon or other alkaline developer may be used. This is useful, as the plates may be exposed wet and very long exposures given without ill results, which is not the case with the old process. If the plates are washed and treated with an organifier or preservative, such as gum-gallic, whiskey, gin, coffee or beer and then dried, they can be color-sensitized with any dyes (*Phot. J.*, 1921, **62**, 5). It is not stated whether anhydrous or the hydrated calcium chloride is to be used, and this would make a lot of difference as to the quantity of silver salt in the film; as if the former be used it will convert practically double the quantity that the hydrated salt will.

Mercury-Sulphide Toning. — H. W. Bennett gives the following revised formulas for this old method of his:

A

Potassium ferricyanide.........	110 g	1 oz.
Potassium bromide............	165 g	1½ oz.
Water......................	1000 ccm	9 oz.

B

Mercuric chloride..............	25 g	60 gr.
Potassium bromide.............	25 g	50 gr.
Water.....................	1000 ccm	5 gr.

The sulphiding solution is 1 oz. sodium sulphide dissolved in 9 oz. boiling water. For a warm sepia tone or brown, use 40 to 60 parts of A to 500 (1 oz.) water; a cool sepia is given by A 40 and B 20; a colder sepia by 30 A and 30 B; a brown black by 30A and 50 B, and an engraving black by 30 A and 90 B to the same quantity of water as above. As the tone gets colder less exposure is required and if 10 seconds be right for the A solution only, then the other tones will require 9, 8, 7, and 6 seconds respectively. After the mercury bath the prints should be washed in three successive baths of 1 per cent solution of hydrochloric acid. (*Brit. J. Phot.*, 1921, **68**, 25).

Pyro for Black and White Work. — L. T. Woods recommends the following pyro developer for making negatives from old and yellowed documents, using isochromatic or self-screened plates:

Sodium sulphite, dry...........	37 g	256 gr.
Sodium carbonate, dry..........	17 g	128 gr.
Potassium bromide.............	2.5 g	16 gr.
Pyrogallol....................	7 g	48 gr.
Water to....	1000 ccm	16 oz.

The pyro is added last and just before developing. When proper density is secured, wash for a minute or two in water and immerse for 5 minutes in a 0.3 per cent solution of citric acid, again wash for a few minutes and fix in acid bath. (*Phot. J. Phot.*, 1921, **68**, 303). Why one should go to all this trouble when far better results can be obtained with hydrochinon is not quite clear; the latter is the ideal developer for all black and white work because of the great density and contrast obtainable.

Factorial Development for Bromide Paper— Dr. B. J. Glover puts forward a strong case for the application of the Watkin's factorial system for bromide papers, which, however, is not applicable to development papers on account of the very short time of appearance. The developer he adopts is the Kodak amidol formula at a temperature of 17° C., and he finds a remarkable coincidence between the exposure multiplied by the time of development, in seconds, for prints showing practically the same result. This forms a constant, which is 1,800. Three cases are cited in which the exposures were 30, 15 and 10 seconds respectively and the factors 10, 15 and 22½ used. The results were practically indistinguishable; and the total times of development were 60, 120 and 180 seconds respectively, which, as will be seen, when multiplied by the exposures, equal 1,800. He formulates his first rule as follows: development must not be for a shorter time than that required to produce the maximum black of the paper. Accepting this, it will be obvious that it will be unnecessary to calculate both exposure *and* development; one only need be determined and the other is at once deduced therefrom, which practically forms his second rule. As he puts it: a knowledge of either the correct exposure or the correct time of development is a complete guide to both exposure and development, since they are dependable variables in the sense that the product of one with the other is a constant quantity. The third rule is: the maximum development allowable is that which just stops short of fog or stain or both. Each developer has its own factor, which in the sense of the above rules varies within certain limits; these for the Kodak amidol being from 10 to 30. As a mean 12 is convenient, and it is advisable to adopt this and make trial exposure strips. He lays down the axiom that the correct exposure for a bromide print is that which, when developed with any developer to an appropriate Watkin's factor, yields a print of the desired depth. This is the only definition in existence, which has any value in practical work (*Brit. J. Phot.*, 1921, **68**, 503, 519).

SULPHIDE TONING. — R. Bullock, of the Kodak Research Laboratory, finds that the character of the emulsion has considerable influence on the resulting color; the faster the emulsion the more purple the color, while slow papers tend to give yellowish tones. Also, with a given paper, the degree of development exerts some action, although this may be masked by the character of the emulsion. With a given paper and method of making the black and white print, the hypo-alum and liver of sulphur (potassa sulphurata) toning processes give practically identical results, while the indirect methods, that is, those in which the image is bleached first, tend to give yellowish prints. The effect of a preliminary treatment of the black and white print with sulphide, prior to bleaching, is to give mixed direct and indirect sulphide toning; the results depending on the exact procedure followed, and, therefore, varying in color. In the indirect process there is no advantage in increasing the ratio of the bromide to more than one-third of the ferricyanide. With 10 per cent of ferricyanide, the color is more yellowish and the bleaching very rapid; with from 3 to 1 per cent, the bleaching is practically no longer and the colors normal: with much less than 1 per cent, bleaching is much slower but the color just as good. The most advisable strength would thus appear to be 3 per cent, or 30 g ferricyanide per liter, (210 gr. to 16 oz.) with 10 g (70 gr.) ammonium bromide respectively. No advantage is to be found by the use of chlorides, while with iodides the tones are more yellowish. For the sulphide bath, a strength of 3 per cent is the best, and the bath should be unsparingly used so as not to exhaust it. Dipping the prints for about 10 seconds into a 1 per cent solution of sodium carbonate, immediately before the sulphide bath, tends to give more purplish tones, particularly with development papers, and when a chloride bleach is used. The final conclusions are that: excessive bromide in the bleach leads to loss of image; too long washing after bleaching should be avoided, as well as weakness or too long use of the sulphide bath, and presence of hypo in the latter (*Brit. J. Phot.*, 1921, **68**, 442).

SPECTRAL LIGHTS FOR COLOR PHOTOGRAPHY. — A. B. Klein has patented the making of color separation negatives by spectral illumination instead of using filters. The regions used must be without overlap, and he considers the latter a detriment to satisfactory three-color work. He uses a right-angled spectroscope, consisting of the usual collimator and slit, the compound right-angled prism as used by Hilger in his spectrophotometer, and a second collimator with an adjustable second slit, so as to isolate any portion of the spectrum, and a condensing lens which throws the spectrum on to the object (*Eng. Pat.*, 166,028, 1920; *Brit. J. Phot.*, 1921, **68**, *Col. Phot. Supp.*, **15**, 47). The possibility of using the spectrum as the illuminant has, of course, been known to every color worker; but as no one has seen how to obtain the light intensity attainable with filters, it has never been practically used. There are some serious difficulties in the way, for instance, the loss of light must be enormous, for if the primary slit be not comparatively narrow, a pure spectrum cannot be obtained. If we set this slit-width at one-sixteenth of an inch, which is allowable in projection, it is easy to see that the amount of light that passes is very small compared to that with a lens working at *f*:8; approximately the ratio of exposures would be about 900 to 1. Unless the prism were very large and the slit corresponding, the spectrum would be very small; though the arrangement of forming the spectrum in the plane of the secondary slit enables it to be projected to any desired size with the necessary accompanying loss of intensity. The unequal distribution of the colors in the prismatic spectrum would also necesitate altering the width of the secondary slit for the red, green and blue in the ratio of about 1: 1.3: 2. The idea of using non-overlapping regions is theoretically and practically unsound. Closely allied to the above idea are the methods of splitting up the lens-images by prismatic elements. This was suggested by Chas. Cros in 1869 and has been used by Drac, Berthon and Moelants, and in the microspectra methods of Lanchester, Lippmann, Rheinberg and others. And it is not too far-fetched to recall Prof. Wood's diffraction grating color system. In all these no filters were used. Even if the enormous exposure and the cost of the apparatus were no deterrent in Klein's method, it is only applicable to still subject and in a dark studio.

A GERMAN BRANCH OF THE KODAK CO. — The Eastman Kodak Co., in consequence of tariff and exchange troubles, has founded a branch in Eberbach, Baden, having acquired the firm of Chemische Fabrik Odin, with a capital of 1,000,000 marks. It is stated that chemical and other products are to be manufactured.

[illegible]

[illegible]

specimens were always in good taste artistically and therefore could not overobtrude themselves, beyond the print's importance that is.

Still, I should like you to print my previous letter and this one as giving my reasons for giving up the method. You are certainly wrong in refusing the ascription of its invention to America.

We in London knew nothing of it till my old friend Holland Day paid me a visit and showed me his specimens of it; many of them were too crude to be endured, colour *as* colour was too great a temptation and in too many cases shouted the print out of existence.

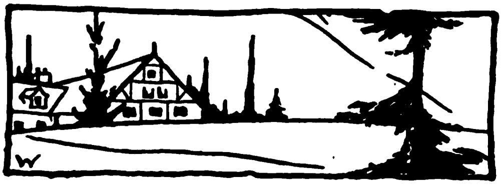
May I venture a criticism on your Buffalo work? If the blocks in your book fairly represent the prints, then I think you are all on the wrong track. There is scarcely a trace of photography's greatest charm and value, perfection and subtlety of gradation. All are in low, muddy, unresolved tones, no real sense of pure gradation, no joy in light, nothing but what depresses me and makes me feel inclined to say if this is photography then it is not worth while, there is no semblance of real art or art feeling in it.

Dipping into the reading, I came on p. 47 on your remarks on exposure. Softness is not to be gained by overexposure without a loss in gradation, the planes run together and will not print in true value. Underexposure will not give boldness without undue opacity and loss of stuff in shadows. The perfect negative can only come from a perfect exposure; full enough to render all details in shadows, but never so full as to run the planes together. *Then* one has to learn how to print it, the depth to which the perfect print must be carried; faking or altering of values on negative imply bad exposure or, what is a more radical error, a bad choice of lighting. A perfectly exposed negative of a perfectly lit subject will print perfectly in platinotype, no faking should be required, it is but making the best of a bad job.

This is after forty years experience.

Yours truly,
Frederick H. Evans.

London, 22:2:22



QUESTIONS and ANSWERS

Pin Holes. — M. F. C., Rochester, N. Y. writes— I find that after I have developed my plates they are covered with pin holes and when they are printed the prints are covered with black spots. I clean off the plates well and I have had the plate-holders and the camera bellows blown out with high-pressure air and still I get these spots. My lenses are clean. I would be very thankful if you could give me a little advice on this subject. I have good luck with films, so I do not think it is the developer. *Answer*. Sometimes too much cleaning off will defeat its own end and will add to the crop of pin holes. Too vigorous dusting or brushing of the plates before putting them into the holders, instead of freeing the plate of dust, causes it to attract to its surface all the dust within reach. There is often a good deal of dust on the brush used for this purpose and the electrical attraction set up by the friction of the brush causes this dust to be deposited firmly on the plate. The best way to free the plate of dust — though plates just taken out of an unopened package are not likely to be dusty — is to tap the edge gently on the edge of the bench before loading onto the holder. Try this instead of using dusting brushes to clean off the plates and see if there is any improvement. Wiping the inside of the bellows with a cloth just slightly dampened with glycerine helps to prevent pin holes.

Amidol Stains. — H. B. N., Boston, asks for "something that will remove amidol stains from the hands and finger nails." *Answer*. The only satisfactory way to keep the finger nails free from stains when using any of the rapidly oxidizing developers such as amidol is to avoid getting stains in the first place. This is a much easier than to try and remove them afterwards. We believe that citric acid would help a little, or, perhaps, bleaching powder (chloride of lime), but you may just have to let the stains wear off by time. Keeping the fingers free from stains is largely a matter of avoiding the causes of stains. After putting the fingers in an amidol solution, rinse with clean water and wipe them dry. Some people find it helpful to rub the fingers with lanoline or cold cream before working to prevent the staining fluid from sinking into the skin.

Plates and Plate Speeds. — H. C. B., Anthony, Kansas, submits five questions, as follows — (1) What is the H. and D. number mentioned in article by Mr. Hall on page 14, January issue, American Photography? (2) Where can I obtain an up to date list of the speed numbers of American made plates and films? (3) What plates does Mr. Davis refer to on page 22 as "having the equivalent of a light yellow filter in the emulsion?" (4) Would not these plates be good for photographing red and white cattle when detail and tone value are wanted rather than pictorial effect? (5) Will you give me the address of the publishers of what you consider the best photographic weekly magazine for the "rank amateur?" *Answer*. H. and D. is an abbreviation for Hurter and Driffield, the names of two investigators in sensitometry. The letters H. and D. on a box of plates together with a number, thus — H. and D. 200 indicates that the speed of the plates has been determined to be 200 with the Hurter and Driffield sensitometer. We can supply you with a list of plate speeds in connection with our *Practical Exposure Disc*, price $1.00, or *American Photography Exposure Tables*, price 35 cents. The plates Mr. Davis refers to are what are known as "anti-screen" or "self-screen" plates. These give a certain amount of orthochromatic correction without the use of a ray filter. The best plates for photographing red and white cattle when detail and tone values are wanted would be panchromatic plates, as these are sensitive to red as well as to other colors. The drawback to their use is that they must be developed practically in the dark, as a red light would fog them. There are no weekly photographic magazines for amateurs published in this country; there is one published in England, *The Amateur Photographer*.

Flattening Prints. — H. B. N., Boston, wants to know how to avoid excessive curling of glossy prints after they have been squeegeed. He says: I have been using glossy Professional Cyko for years without very much trouble until of late when my prints have been coming off the ferrotype plates so curly that it is almost impossible to get them flattened out again." *Answer.* We have found that the best way to flatten our squeegeed prints to prevent their curling after coming off the ferrotype plates is to use a straight-edge very carefully, passing it over the back of the prints and at the same time raising the print slightly. This must be done very carefully or the glossy surface may crack, but we have found that if it is done immediately after the prints fall off the ferrotype plate and before they have had time to curl up very much, it can be done successfully.

If the prints are placed under a weight or in a press for some hours after this operation, they will remain practically flat. Mounting the prints on linen by pasting the linen on after the prints are on the ferrotype plate and before they are quite dry is a good way to keep them flat.

INTENSIFIER FORMULA — H. P., Rochester, N. Y., writes — In your January number, *American Photography*, on page 54, there is a formula for mercurial intensification. I would like to try it, but I have no way of changing the formula so I can try it. Will you please give me the formula in ounces, drachms and grains? *Answer.* The rules for converting cubic centimetres to ounces (fluid) and grammes to grains are: —

To reduce ccm to ounces: divide by 28.3
To reduce g to grs: multiply by 15.43

The formulas referred to are as follows: —

Hydrochloric acid	10 ccm
Ammonium chloride	150 g
Mercuric chloride	20 g
Water to	1000 ccm

Potassium permanganate	4 g
Hydrochloric acid	20 ccm
Water to	1000 ccm

These, converted into ounces, drachms and grains would read: —

Hydrochloric acid	3 drms.
Ammonium chloride	5 oz.
Mercuric chloride	5 drms.
Water to	40 oz.

Potassium permanganate	1 drm.
Hydrochloric acid	6 drms.
Water to	40 oz.

SEPIA TONER — C. J. W., Cleveland, Ohio, asks for a formula for a single solution sepia toner. *Answer.* The best formula for a single solution sepia toner is the well known hypo-alum bath which may be used either hot or cold. It is a very simple formula: —

Hypo	2½ oz.
Powdered alum	½ oz.
Granulated sugar	½ oz.
Boiling water to	20 oz.

Dissolve the hypo first, add the alum slowly. The sugar may be omitted if desired. There will be a sediment at the bottom of the bottle but the solution should not be filtered. It should be shaken up before use so that the sediment is taken up. Tear up some old prints and place in this solution and heat it two or three times up to about 120 degrees F. This is to "ripen" the bath so that it will not bleach the prints. The fixed black and white prints to be toned should be placed in the bath when this is cold and the whole warmed, keeping the prints on the move. The time of toning will vary according to the kind of paper and developer, the age of the print and the temperature of the solution. The quickest results are obtained by raising the temperature as high as the picture will stand, generally about 100 degrees F. but the best tones are obtained at about 85 degrees and the average time at that temperature will be 15 minutes. The bath may be used cold, in which case the toning may take as long as two or three days.

PARAMIDOPHENOL. — C. M. T. writes — "On page 69 of the February issue of AMERICAN PHOTOGRAPHY, you publish an article called "Just Plain Prints." In this article you give a formula for direct sepia development using the chemical "Paramidophenol." I am very anxious to try this but cannot find any chemical company or drug store in this city that can either explain the composition or furnish the above mentioned chemical. *Answer* — Paramidophenol or para-amido-phenol is a compound that is used for making up highly concentrated developers in liquid form, such as, for example, Rodinal. Amidol resembles paramidophenol but is not identical. You ought to be able to get this from any dealer in photographic chemicals such as G. Gennert or John G. Marshall.

LARGE PANORAMAS. — L. E. T. wants to know whether it is possible to make a 5" x 20" panoramic view through a pinhole lens. *Answer* — It is possible, of course, to make such a panoramic view through a pinhole provided you have a large enough camera and large enough plate or film to make a picture 5" x 20", but it would not be sufficiently sharp for any commercial purpose. Why do you not try the method of making such a view in sections, as advocated by C. F. Stiles in AMERICAN PHOTOGRAPHY for November, 1921? You could get it by making three exposures on 5 x 7 plates. We can send you a copy of the issue containing this article for 25 cents. This is for ordinary lens work, not pinhole, though such a series might well be made with a pinhole.

LARGE TANKS. — M. S. C. writes — "Can a 10-gallon Elon Hydro developing tank be made of sheet brass?" *Answer* — A tank made of sheet brass probably would be quite satisfactory for all practical purposes, but it would be better if it could be nickel plated.

ENLARGING, ETC. — R. A. M. asks six questions: 1. What is the most efficient form of illuminant for enlarging, what do commercial workers use? 2. What is the most popular size and style of camera and lens used by newspaper photographers for sports? 3. To approximately what size can a 1" x 1½" negative made on M. P. film with 2" lens be enlarged to and still compare favorably with a contact print? 4. What size and kind of camera is used to make the pictures displayed in motion picture lobbies; the photos being usually about 8" x 10" in size? 5. Is it still possible to obtain the Library of Practical Photography in ten volumes, as published by the American Photo. Textbook Company, Scranton, Pa. some years ago? 6. Is there at present an American agent for Reitzschel's Multi-Clack and Polygon line of cameras, formerly sold by The Meyer Camera and Instrument Co., New York? *Answers* — We believe that most of the commercial workers use the arc light for enlarging. This is a very satisfactory illuminant in many respects but it is one of the hardest to manage. Newspaper photographers use a 5 x 7 Graflex very frequently for sports, street work, etc. The size to which a 1" x 1½" negative on M. P. film can be enlarged depends very largely on the definition given by the lens with which the picture was taken. Motion picture film, on account of its comparatively course grain, is not suited to very much more than three or four times enlargement. The "stills" displayed in lobbies are usually made with an 8 x 10 view camera and are not enlargements from the small film. It is no longer possible to obtain the Library of Practical Photography and there is no American agent for the cameras you mention.

Retouching. — W. C. H., referring to Johnson's book on Retouching Negatives, says: "I purchased this book from you some time ago and to me it is utterly worthless for the simple reason that it is written by an Englishman and all the materials he tells you to use are English materials and very few of them can be purchased here. Some of the materials mentioned are — Hardtmuth Everpointed pencils, Negafake Erasing pencil, glasspaper block for sharpening pencils, and so on. *Answer.* — All the materials referred to in the book are readily obtainable in this country, though some of them would be the product of another manufacturer. For example — for Hardtmuth pencils, you can substitute Venus Everpointed pencils or Dixon's Eldorado. A pencil is a pencil all the world over. Glasspaper for sharpening pencils is the same as sandpaper and can be obtained at any hardware store. Water-colors you can purchase at any art store. It is not essential that they be made by Winsor and Newton; any good water-colors will do. The Negafake Erasing pencil is imported and sold by Ralph Harris and Company of Bromfield Street, Boston, Mass., but there are erasing pencils made and sold by the Eastman Kodak Company, and others, that are just as good as Bruce's Negafake. Some of them are made of fine strands of spun glass.

Amidol Developer. — W. W. K., addressing the letter to the associate editor, writes: — "I had no pleasure or enthusiasm in developing films and prints until I tried the formula given in your "Pictorial Composition" and I am now very much interested, because it seems to me that there is a developer which is all anyone can ask for. If you will please tell me whether you use bromide in connection with it or whether films developed for 5 minutes, at a temperature of about 70, would be a normal development, I would certainly appreciate your courtesy." *Answer* — Amidol is a developer that works very well without any bromide, in fact, bromide has very little restraining effect in an amidol developer except when it is used in rather large quantities. It does, however, have a clearing effect and it is a good plan to use it if you find there is any tendency to general fog. In cases of overexposure about 15 drops of a 10% solution of potassium bromide may be added for every ounce of the developing solution. As to whether films developed for five minutes at a temperature of about 70 would be a normal development would be hard to say. It depends upon what you want as regards density in the negative. Amidol is a developer that brings out detail first and density afterwards and there is always danger of stopping development too soon when this developer is used by one who is not familiar with its peculiarities. Its factor is 18 (used at a strength of 2 grains to the ounce) and the best way to find out the time of development that suits you is to experiment on one or two exposures, varying this factor if it does not give you the results you like.

Competitions. — A. W. B. asks whether it is necessary to become a subscriber to the magazine before entering our contests, also whether photographs sent in on postcards will be all right. *Answer* — There is no requirement that competitors in our competitions must be subscribers to American Photography, but the only notice of the results of the competitions is given in the magazine, so that if you desire to send prints to our monthly competitions and discover where you stand in relation to others, it would be advisable for you to read the magazine regularly. Postcards may be entered.

Metol Poisoning. — L. H. M. writes to us, regarding metol poisoning, as follows — "I see in this month's American Photography a case of metol poisoning. I was poisoned with metol about seven years ago and the following recipe cured me so that I have not been troubled since, although I have been using metol ever since:

Glycerine	1 oz.
Spirits of camphor	1 oz.
Carbolic acid	10 drops

Rub this over the parts affected and in a few days the rash will disappear." There are several such remedies for metol poisoning, all of which are good and all of which have proved efficacious, but, just as the metol poisoning itself affects some people very readily and others not at all, so the remedies cure some and have no effect on others. The only thing to do is to try various remedies till one is found that is satisfactory.

Exposure Meters. — J. G. writes — "I have been reading in *Practical Photography No. 1* about the actinometer. I understand that it is simple to operate and by using one of these meters one can test the light, which really is the best and surest thing. I would like to know how much one of these meters costs and where I can get one." *Answer* — Our Practical Exposure Disc costs $1.00. A meter that indicates the strength of the light by darkening a little piece of sensitive paper, like the Watkins or the Wynne meter, would cost you about $2.00. Any good photographic supply house carries these meters. In using an exposure disc you have to use your own judgment in deciding whether the light is intense, bright, dull or very dull, and in meters like the Watkins or Wynne meters the strength of the light is ascertained by reckoning the time it takes for a piece of sensitive paper to darken sufficiently to match an adjacent tint. Either kind used intelligently is of great help in calculating exposures.

Orthochrom T. — R. K., Jr. writes — "I have a formula for increasing the sensitiveness of a plate to yellow or electric light. It calls for "Orthochrom T Solution (1:1000)". Can you please tell me how to prepare this solution, what it is and where it is can be purchased." *Answer* — We believe the Eastman Kodak Company can supply you with Orthochrom T solution in small quantities. You should apply to the Research Department.

Photography by Invisible Light. — A. M. K. writes — "Please let me know if you have any publication describing the work of Professor Wood of Johns Hopkins University on photographing with ultra-violet and infra-red rays and on the experiments of Henri Becquerel in photographing with Becquerel rays, which I believe are of shorter wave length than the ultra violet. *Answer* — In reply to your letter, we are glad to be able to inform you that we have an article on the subject of photographing with infra-red rays now in type and it will be published very shortly.

ROUND WORLD EXCHANGE CLUB

In connection with the Round World Exchange Club we think that some of the more advanced workers who read these pages would find food for thought in the following letter from one of our most active contributors to our competitions.

Mr. F. R. Fraprie,
Dear Sir:

I enclose application for membership in Round World Exchange Club. In looking through the lists of members I am disappointed that so few regular participants in AMERICAN PHOTOGRAPHY Competitions seem to be interested in exchange of prints or, what is much more important, the exchange of thought in regard to the whole problem of photography. The larger cities have camera clubs where interested workers can meet for the exchange of thought upon the subject, but in the smaller communities the worker has no such opportunity; he must grub along with no help but such as can be gained by reading. This is, no doubt, of the greatest benefit but it lacks the personal quality that is such an inspiration. I should like to see those whose names appear on the Roll of Honor taking an interest in this exchange, they have a great opportunity to be helpful. Very truly yours.

H. D. Warren.

Owing to an error which we very much regret the following names were omitted from the list published last month. This is the reason the numbers do not run consecutively.

1158 Harry C. Robey, Plain City, Ohio. 3¼ x 5½ D. O. P. Landscapes, livestock and commercial subjects.

1159 W. H. Soames, 949 Lowry Avenue, N. E. Minneapolis, Minnesota. 2⅞ x 4⅞ D. O. P., miscellaneous views.

1160 M. Cox, Box 515, Cleburne, Texas. Details of size, printing process and subjects not given.

1161 Denjiro Maki, No. 65 Nakake-Cho, Sendai, Japan. About 4 x 6 inches, gaslight paper prints good pictures in photography.

1162 Arthur F. Carmody, 503 Hawthorne Avenue, South Milwaukee, Wis. desires to exchange scenic landscape subjects for mountain and foreign views. His prints are on Azo paper, size 2¼ x 3¼.

1163 John E. Weber, 610 Market Street, Sunbury, Penna. 2¼ x 3¼, 3¼ x 5½, 4 x 6. P. O. P. Azo contact prints and enlargements, views and subjects suitable for newspaper work, such as wrecks, fires, etc.

1164 B. L. Gardner, 820 O'Farrell Street, San Francisco, Calif. 3¼ x 3¼, Velox, Glossy prints, Stereos of California.

1165 J. J. Kendall, Box 682, Tenino, Washington. 4 x 6 Gaslight prints, Views.

1166 William Kaplan, 184 Georgia Avenue, Brooklyn, N. Y. 2¼ x 3¼, 4 x 5, D. O. P., City Night Scenes, also speed pictures.

1167 H. Bogdan, 1453 Lefferts Avenue, Richmond Hill, L. I., N. Y. 3¼ x 5½, D. O. P., City Views and general subjects.

1168 Ted Newstrum, 800 East 5th Street, Ellenburg, Wash. V. P., 2¼ x 3¼, 2½ x 4¼, D.O.P., Scenic Silhouettes and Water Falls.

1169 P. B. Oakley, P. O. Box 331, Geneva, N. Y., 3¼ x 5½, Historical and News Subjects and Scenery

1170 Alta Wald, P. O. Box 52, Cornwells Heights, Penna. 3¼ x 4¼, Gaslight and sepia prints of Country and Home Scenes, Figure Studies and Photographic Postcards.

* * *

1192 E. M. Addison, 29 Armandine St., Dorchester 24, Mass. 2½ x 4¼, Azo paper, Landscapes, various subjects.

1193 William F. Wilson, P. O. Box 301, Albany, N. Y., 3¼ x 5½, 8 x 10, Azo contact prints and Bromide enlargements, Views of Honolulu People of West Indies, Panama Canal, Wild animals.

1194 Jerome L. Hodous, 407 Yale Station, Yale University, New Haven, Conn. 2¼ x 3¼, D. O. P. College life, crew, athletic speed pictures.

1195 Harold Bennett Porter, Ford Hotel, 1135 Third Street, San Diego, California. 4 x 5 and smaller, Azo paper, Educational and scenic subjects.

1196 Charles I. Reid, Millerbsurg, Pa. 4 x 5 to 8 x 10 gaslight prints and enlargements. Foreign views, Genre, Natural history, etc., only the best class of work desired and offered.

1197 Juliana Mann, Troy, Vermont, 2¾ x 4½, gaslight prints, Nature studies.

1198 Elmore Reynolds, 1006 Allen Avenue, Ft Worth, Texas. 4½ x 2¾, D. O. P., all subjects'

1199 John H. Kempf, 91 Broadview Terrace, Pittsfield, Mass. 2½ x 4¼, D. O. P., Prints of any subject, good work only.

1200 H. A. Latta, P. O. Box 305, Hickory, N. Car. 2¼ x 3¼, 3¼ x 5½, P. O. P. various. Views and figure studies.

1201 Andrew Hatz, 734 Division Street, Camden, N. J. 3¼ x 5½, 4 x 5 D. O. P., Seashore, mountain and miscellaneous.

1202 George Hinvers, 682 Weetamoe St., Fall River, Mass. 2¼ x 3¼, D. O. P., all subjects.

1203 A. M. Kennedy, Mitchell Dam, Verbena, Ala. 5 x 7, Velox paper, Hydro-Electric Construction, Scenery, Stream Control.

1204 Mitchell W. Allen, 3835 Randolph Avenue, Oakland, Calif. 3¼ x 5½ and smaller, D. O. P. Miscellaneous.

1205 Henry A. McGinn, Dixon Corners, Ontario, Canada. 3¼ x 4¼, 2¼ x 3¼, D. O. P., P. O. P., landscapes and pictures showing dynamiting operations.

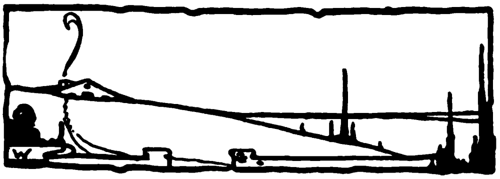
1206 William N. Gray, 206 Water Street, St. John's Newfoundland. 5 x 7 and smaller, Velox, Various.

1207 Robt. T. Peel, 167 Main Street, Oxford, N. S. 3¼ x 5½, D. O. P., Views.

1208 Roger A. Hart, 811½ First Street, Newberg, Oregon. 2½ x 4¼. D. O. P., Still Life Studies, also many fine scenic Landscapes of Oregon Mountains, rivers and Pacific Ocean. Exchanges especially desired from Italy and France.

1209 Herman D. Warren, 603 Jefferson Avenue, Elgin, Ill. 3¼ x 5½, 5 x 7, D. O. P., Illinois landscapes.

1210 David Alvares, Naga, Camarines Sur, P. I. 141 Bagong Bayan St. 3¼ x 5½ daylight printing, Portraits and Landscapes.



LOCAL MANIPULATION

Not long ago I had occasion to talk with a dealer who during the winter had been very pessimistic about the photographic business, and it was with something of a shock that I discovered how much his attitude had changed in the intervening time. Where at the time of our previous conversation he had been wondering whether the camera business had been "shot" for good, the public's interest in it gone forever, he was now planning for a considerable enlargement of his stock and in fact speculating on the possibility that the manufacturers might hold up some of his recent orders twenty-four hours too long.

When I reminded him of his previous discontentment and discouragement he smiled. "Photography is a good deal like marbles," was his way of putting it. "Marbles and roller-skating and bicycling. In the dead of winter the boys are not interested at all. But, let a stretch of good spring weather come along and the youngsters react to it just as surely as the birds when they decide that it is time to make their northward migrations. Out come the bicycles, out come the marbles, out come the roller skates, and the youngsters who haven't any, pester their parents until the deficiency is supplied. It is a good deal the same way with cameras and film. A good warm Sunday early in the spring brings out the cameras and gets the people who haven't any wishing that they had. And pretty soon the photographic business for another season has got satisfactorily started."

So simple — and what becomes of all our fevered apprehensions over the effect of the depression? Evidently they disappear into that limbo of forgotten things that we have scrapped with last year's cast-off clothing. Fears and worries can always be easily forgotten once we have lived them through.

Yet, although few of us give much attention to the idea, isn't this newborn confidence which is to be noted on every side merely a result of conditions? Every depression must have a beginning, a low point and an upward trend, and although the general drift may not be clear at the time its effect is felt nevertheless. According to the dope sheets, we are now quite a few months removed from the low point, and have for some time been climbing upward to a really prosperous condition, and this naturally engenders confidence and a willingness to loosen up a bit.

At least it is amusingly plain that many people who a while ago were desperately clutching their flattened pocketbooks in fear of being caught without the wherewithal to pay next month's rent are now entertaining with confidence the purchase of long-wanted articles of personal comfort, convenience and adornment — and amateurs who wanted new cameras are getting ready to buy them.

Besides, as I said last month, there is something about the spring itself which takes the wrinkles out of your liver and makes you feel more like circulating around in the open air and indulging in foolish hopes and aspirations, or what looked to be such during the confining days of winter. A half-holiday spent in the open at this time of year takes the pessimism out of anyone, or ought to, especially if he has acquired the friendly camera habit and has learned to tramp for miles in search of effective compositions. Look back, kind friends, over your gloomy past, if such at times it may seem, and see if the bright spots are not the rambles with your camera, with the birds singing blithely in the tree-tops and the hills and meadows looking fresh and clean under a pleasant sunny sky. The gifts of the gods belong to none so truly as to those who have learned to enjoy hiking about the country with a camera.

THE INTENSIFIER.

SKETCH-BOOK LEAVES

HILL AND MOUNTAIN VIEWS

For inspiration go to the mountains. This is a common saying, and though the advice is such as not everyone can take, nevertheless most people who can do so try to include the mountains in some part of their summer vacation. In planning a motor trip, the desire to include hill country in the itinerary is ever present, for nothing is quite so effective in breaking up the monotony of the landscape and giving that pleasant sense of surprise which is the life of an extended journey.

Most amateur photographers looking forward to a vacation spent at least partly in the hills have wonderful visions of the pictures they will get, but too often they are disappointed at the meager showing disclosed when the vacation negatives have been duly developed and printed. The reason is not far to seek. It is not enough to look forward vaguely to the opportunities for pictures, without a definite idea as to what sort of pictures to make. The amateur who goes forth in this manner, merely expecting to know what he wants when he sees it, is likely to be disappointed, for a number of reasons. One of these is that when the time for selection comes he may not have time to fool around and try one view and then another, but must make his decision quickly and go on with the others in the party. Especially is this the case on a motor trip, for when traveling in this manner there is usually a reluctance by everyone to linger long upon the road. The scenery may be enjoyed from the car; so why, forsooth, stop for ten minutes or a quarter of an hour for this purpose? The amateur on a motoring trip must indeed be quick in his decisions as to what it is practical and desirable to photograph, for while he might be willing to delay and consider the matter the others in the party are not like-minded. Another point is that making pictures in the mountains is not merely a matter of appreciating what is beautiful scenery. Many beautiful scenes make very poor pictures, for the simple reason that the camera man, with the tools available to him, cannot capture the effect which his eye beholds. The thing may be too big, so that the small section which it is possible to include upon the plate gives an impression quite inadequate. Or the short-focus lens may rob the distance of its power. Or the contrast between the dark foreground and the strongly lighted distance may be so great that even with a filter a flat and lifeless sky is the result. All these matters should be thought of in advance, and if possible a tentative list of subjects or types of subjects made up before starting out.

This is not so very difficult. A simple and pleasant method is to collect from time to time, as opportunity offers, reproductions of good mountain views, which may be found in magazines, newspapers, Sunday supplements, rotogravure sections, etc. Just cut them out and slip them into an envelope until you have a fair collection to lay out and compare. As the collection grows, the various pictures will naturally fall into groups, according to the type of subject and the composition, and the study of them will enable anyone of fair intelligence to make a list of certain sorts of views for which to be on the lookout. Do not be afraid that you will be following a method of slavish imitation, for the chances are that in most cases you will be led to vary the plan of the picture to such an extent that the composition will be quite different in most respects. The big advantage of this method is that it is a method of definite visualization rather than hazy expectation. Besides, there is the point that pictures which have succeeded in getting themselves published are at least a practical guide to what is worth going after.

MORE ABOUT CAMERAS

Echoes of the discussion in regard to cameras are still coming this way, and among them is the follow-letter from E. H. Washburn, which readers will undoubtedly enjoy:

I was greatly interested and amused, in reading in the February AMERICAN PHOTOGRAPHY the answers in the Question Box regarding longed-for apparatus. Interested, because I always take an interest in fine cameras: amused, because it brought back to my mind's eye the group of camera fans, in those days derisively scoffed at as camera "fiends," that used to congregate during the lunch hour at Horgan Robey & Co's. store and swap experiences, some twenty years ago. There we would in theory, invent the most perfect of cameras, and it is a source of wonderment to me, now, how we ever escaped being employed by the research and experimental department of the Eastman Co. or Folmer & Schwing (who had not then become a department of the E. K. Co.) After lengthy discussions and suggestions, made to our always patient and good-natured friend, Billy Bourne, he would finally suggest that "what you fellows all want are cameras with hot and cold water, electric-lights and private bath." This usually came at about breaking-up time, when we reluctantly would return to our respective jobs, convinced of the hardships of poverty and particularly of camera-poverty, for very few of us had more than *four* or *five*. In the well-known words of the cartoonist, "them was the happy days," before the chemical side of photography had reached its now well-nigh automatic perfection, and we fought many a brave battle with the "Pyros" on one side and the "Metols" on the other. Also, the "Bromides" and the "Platinums" would enjoy a bloodless tilt.

And now, to-day, when photo-chemistry is almost an exact science , with all the mystery (as well as the bother) left out, it appears that there still persists the old heart-ache for not-yet-obtainable cameras of high degree, notwithstanding the fact that there are now literally scores of makes and models.

But I fear that your correspondents, although great fans, have not given the careful canvass of the world's markets that some of us were wont to do, or they must have discovered that the firm of Carl Zeiss offers a camera of almost the exact specifications of Mr. McKay, viz: Universal Palmos 9 x 12 CM., to which I respectfully refer him, so that he may not perish with his longing unrequited. What though the price is of nearly enough to purchase a "used" Ford. Has not Mr. Ruppel intimated that half-a-thousand would be cheerfully paid for such a paragon?

But, speaking seriously, is it not quite remarkable what fine results were accomplished with the cameras of bygone days, equipped with "R.R." lenses (once translated "Railroad" by an uninitiated friend of mine) and our good friend Mansons's famous "Parker House" lens which he jokingly used to say was made over from the bottom of a broken beer-tumbler from the Parker House bar? "The times change and we must change with them," or fall back to the rear. And so it is a fine thing to have the great selection of "precision" cameras, which we now enjoy. The real advantages, it seems to me, are the ease and certainty with which a high average of technically perfect results may be attained. And I, too, expect to remain a fan, yearning for impossible things. There is one thing in the camera line I much desire, but know will never be, which is, a vest-pocket camera for making 8 x 10 prints by contact. Perhaps in Photo-Valhalla there is such a one. Who knows?"

And here is another letter, from W. D. Tyler:

Replies in the current issue of A. P. for a desirable camera, not on the market, are most interesting and also instructive.

Now if not too late for consideration may I briefly give my idea of a camera that should appeal to the serious worker, who needs a high-grade instrument, that will do anything that it is called upon to do and still be light and small enough to be carried in comfort, for really if one has to take an instrument the size and weight of which are a burden, then the pleasure is not worth the effort.

Others have given quite elaborate descriptions and arguments that are commendable, but I will confine my description briefly as to size and principal parts.

Size, 2¼ x 3¼, Roll film — a convenient pocket size.

Body, all metal, light weight — not covered with leather.

Adjustments, Focusing scale, rising and falling front with side shift.

Back, one back for roll films and one with ground glass and focusing hood.

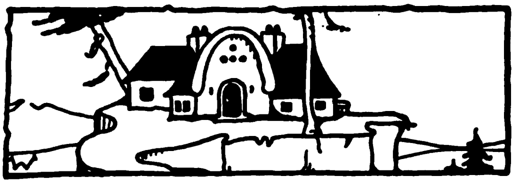
Plate holders, thin light metal, for thin glass plates or cut films like the Eastman Portrait Film.

Bellows, long enough to use both combinations of lens.

Lens, double combination on 2-focus type.

The 1¾ x 2¼ size is very conveniently carried, but contact prints are too small to be satisfactory, and to resort to enlarging every picture, one must not forget that many films or plates have "pin holes" or other defects, and these defects enlarge with the picture and sometimes these defects are very troublesome. The $3\frac{1}{4} \times 4\frac{1}{4}$ size will make very satisfactory contact prints and seldom will need enlarging, but the camera is too large to be carried in a coat pocket. But if one expects to carry his camera by the handle, or hook it onto a strap, then a 4 x 5 or even a 5 x 7 may be used.

I have had 5 different sizes, and after giving due consideration to them all I invariably pick up the $2\frac{1}{4} \times 3\frac{1}{4}$ when starting out on a vacation or an afternoon's stroll. — W. D. Tyler.



THE QUESTION BOX

WINNING ANSWERS TO FEBRUARY QUESTION

Why does a portrait attachment give a larger image, and what bearing does the answer have upon its effective use?

The function of the portrait attachment is to shorten the focus of the lens with which it is used. This also increases the angle of view. The bellows on a pocket camera is, for the sake of compactness, kept as short as possible, the usual bellows extension not allowing objects nearer than six feet to be sharply focused. By shortening the focus of the lens an effect equivalent to longer belows extension is produced, which will allow objects placed as close as two and one-half feet (in the focusing cameras) to be focused. Obviously the closer the camera is to the subject the larger will be the image recorded on the film.

This method of getting around the difficulty, however, brings up the question of distortion. The portrait attachment shortens the focus of the lens, roughly, about 1-5 of its focal length. For example: With a 5 inch lens covering a $2\frac{1}{4} \times 4\frac{1}{4}$ plate (film) this will amount to nearly one inch. We therefore have in effect a 4-inch lens used on a plate the longest side of which is $4\frac{1}{4}$ inches, whereas the rule for pleasing perspective calls for a lens of a focal length about equal to the *diagonal* of the the plate (which in this case is 5 inches).

If, however, care is used in posing the figure, seeing that the hands are kept as much as possible in the same plane as the face, the attachment serves its purpose quite acceptably.

As noted above, the portrait attachment increases the angle of view, a fact which is sometimes of use in photographing interiors. If a focusing screen of ground glass or tracing cloth is fastened in the back of the camera and a scale marked off on the bed of the camera by its aid with the attachment in place, the camera will be ready at any time for this work. Stop 16 should be used to insure good definition to the corners, as the attachment brings in some of the aberrations which had been corrected in the lens. I have had good results with the attachment used in this way. — Carl W. Beese, Fenwick, R. R. 5., Ontario, Canada.

OTHER ANSWERS

A portrait attachment gives a larger image by enabling the operator to work closer to the subject than he otherwise could with the same bellows extension. The attachment itself is a supplementary lens which serves to shorten the focal length of the camera lens. For example: if we have a camera equipped with a six inch lens, the bellows will extend, perhaps, seven inches — far enough to permit focusing objects as close as five or six feet away. If we place over this lens a portrait attachment of eighteen inches focal length, the combination will have a focal length of about four and one half inches. With this lens and our seven inch bellows we can photograph small objects nearly full size, or make head and shoulders portraits which fill the plate.

There are several disadvantages in the use of such a lens. The attachment is sold at a low price and fine correction cannot be expected. The errors that exist will upset the definition of the camera lens to some extent. This is of small importance in purely portrait work, but might be an objection when the outfit is used for other purposes.

As the larger image is attained by bringing camera and subject closer together, care must be used to avoid steep foreshortening or exaggerated perspective. If the subject is placed at, say two feet, from the camera and one shoulder turned toward it, the further shoulder will be nearly twice as far from the lens as the nearer one and consequently, in our picture only half as large.

This example, like the perspective, is rather exaggerated, and the "portrait" would have more appeal to the maker of comic valentines than to the subject or his friends.

Much better results can be had by subsequent enlargement of a smaller image made with camera light or ten feet from the subject, or by the use of a lens of longer focus, farther away. — B. R. Boyce

And here is an answer for those who are interested in the mathematical calculations:

(1) Why does a portrait attachment give a larger image, and (2) what bearing does the answer have upon its effective use?

(1) In combination with the objective for which it is designed, the portrait attachment gives a larger image than does the objective alone for a fixed bellows extension (i.e. image plane distance from node of exit), with the distance of the object variable at will, though not for extremely distant objects nor where the object distance is fixed.

Herein lies the entire usefulness of the portrait attachment.

This property depends on two laws of optics, of which one may be stated briefly: — In general, the combination of two or more positive elements or systems is of shorter focal length than either of the components, and may be formulated: —

$$\frac{1}{f} = \frac{1}{f_1} + \frac{1}{f_2} - \frac{d}{f_1 f_2}$$

The addition of the portrait attachment operates to decrease the focal length when combined with our camera lens.

Let us now investigate why the shorter focal length gives a larger image at a fixed bellows extension. Our other law on which this depends may be formulated: —

$$\text{(a)}\quad f + rf = do$$

$$\text{(b)}\quad f + \frac{f}{r} = di$$

where "f" is the equivalent focal length, "r" the ratio of linear reduction from object to image, "do" the object distance from the lens, and "di" the image distance from the lens, disregarding the separation of the nodal planes.

Now let us suppose that we have an average roll film camera with which ordinarily we cannot focus sharply on any object nearer than six feet (which is about the practical limit for focusing by scale) equipped with a six inch lens. If we now focus sharply on an object six feet from the lens our formulae become:

$$\text{(a)}\quad 6 + 6r = 72$$
$$\text{or } r = 11$$

or our linear image will be 1/11 of our linear object.

$$\text{(b)}\quad 6 + 6/11 = \text{di or}$$

6 6/11 is the distance of the image from the lens.

Now without changing the distance of the lens from the film let us add a portrait attachment of such focal length that our new combination has a focal length 5 7/13". As the image distance is fixed and known we can substitute in (b) and determine "r" to be 5½, and substituting in (a) determine "d" to be 36".

If we are trying to make a portrait of a man's head and shoulders, say 16½" high, in the first case without the portrait attachment and with the man's eyes six feet from the lens we obtain an image 1-11 of 16½" or 1½" high, and in the second case with our portrait attachment and with the man's eyes three feet from the lens we obtain an image 2-11 of 16½" or 3" high which would make a suitable head and shoulders portrait on the 3¼" x 4¼" for which a six inch lens would be suitable.

(2) Personally we consider the portrait attachment an expedient made necessary by poor camera design, and prefer sufficient bellows extension and a ground glass screen for direct focusing, also to get the images by using a lens of longer focus or else by after-enlargement. But camera makers (quite naturally) will make and continue to make, whatever the most of their customers demand.

Many camera users rarely want to make portraits or large size pictures of small objects such as single blossoms. For them the many different models of light, inexpensive, and compact roll film cameras on the market are suitable and desirable. And when they do want larger images the portrait attachment is a convenient and inexpensive adjunct which everyone with such a camera should have.

A consideration of the formulae given before together with those of depth of sharply defined field (or depth of focus as it is more commonly called) and perspective, in connection with the use of the portrait attachment would show us: —

a. That on account of the short distance from the object at which we work, the depth of field is very little and consequently we must keep our principal object in one plane as much as possible.

b. That for the same reasons the portrait attachment lends itself to distorted perspective. Therefore we should confine ourselves to one principal object, if possible, and choose a plain unobtrusive background.

c. That, in the absence of a ground glass screen for focusing we are limited to marked focusing scale distances for setting the lens and must measure the distance from the lens to the object plain in sharpest focus very carefully in accordance with the instructions of the maker.

In connection with the foregoing it is interesting to note that a positive portrait attachment by decreasing the equivalent focal length enables us to obtain larger images of near objects (more accurately, to focus sharply with the object nearer to the lens) with a given bellows capacity and length of camera bed, while the negative tele-photo attachment by increasing the equivalent focal length gives a larger image of distant objects again with a saving of bellows capacity. — B. H. Jacobs.

MAY QUESTION FOR READERS

What advantage, if any, has daylight enlarging over enlarging by artificial light?

For the best answer to this question received by June 15th a credit of $2.00 will be awarded towards books of our publication. All readers, whether subscribers or not, are eligible to this contest. Address the Question Box Editor, write or typewrite on one side of the paper only, and put any other communication on a separate sheet.

READERS' CRITICISMS

BEST CRITICISM PRINT No. 26

This is a type of picture not easy to handle. Subordination of either the image or the subject is usually necessary although it is possible to give equal importance. But in this picture there is conflict; the image being much more interesting than the subject and yet not so prominent. One gets the impression that two different subjects are present; in short, that the mirror is an opening into another room from which a young lady is gazing curiously toward the camera.

When photographing a reflection, especially of a person, one should avoid reflections of distant objects, as these tend to make the main image appear smaller and less important than when they are dodged.

Assuming a rectangular mirror, I believe a better arrangement would be to have the young lady seated at the bureau and the camera shifted to the right to avoid the full face portrait.

The composition in this print is poor; one finds rectangles, triangles and irregular curves — a mixed lot. The mirror balanced on one point seems in danger of toppling over, while the glare of the white dress is persistently disturbing. Technically, there's no fault to find. — George A. Beane, Jr.

OTHER CRITICISMS

In good composition our eyes are guided subconsciously as it were, to some point in the picture upon which our gaze rests satisfied. This we call the point of emphasis, and all other lines and details should be subordinated to it and further should gently lead the eyes to this point. It may be the brightest highlight or the deepest shadow, but we feel pleased when we look on such a picture. In the picture we have this month there is no rest for the eyes, because there has been no endeavor to direct our eyes to any given point. The picture is a wilderness of tiresome details from the nicknacks on the bureau to the many details reflected in the mirror. No converging lines to draw our gaze to the reflected face. The figure is badly posed and is obviously watching the camera through the mirror. Had she been placed nearer the glass and her figure inclined so as to bring the reflection of her face nearer her head, the maker in so doing would have improved his composition by the triangle thus formed by the figure and its reflection. At the same time he should have required his model to look at her own reflection instead of the operator. He would also have preserved better perspective; as it is, the sense of atmosphere is lost by the more distant objects being in sharper focus that the nearer ones. The print is much too contrasty, either through underexposure or overdevelopment. There are no flesh values shown nor are there any gradations in the draperies. The source of light is too low, but this probably could not be remedied under their posed conditions. Had the maker so arranged the mirror that the bedpost and other details were not reflected and if possible had he arranged his model so that there would be more illumination on the shadow side of the reflected face, with the figure posed as previously suggested, the result would have been far more pleasing. —C. B. Rosher.

When this lassie grows up, if she should always be as busy as this picture of her, what a fine wife she would be for somebody!

Why the extremely scattered arrangement? The child — judging from either of the images of her — seems to be truly charming; but she ought not to be forced to compete with such a multiplicity of baskets, scissors, bottles, cushions, wall-paper stripes, etc., etc.

Why the exact balance between the two representations of the subject?

Why the chopped-off corner of the mirror?

Why the explosion-in-a-shingle-mill arrangement of lines?

Why the lack of texture in the dress?

And what is she doing, anyway?

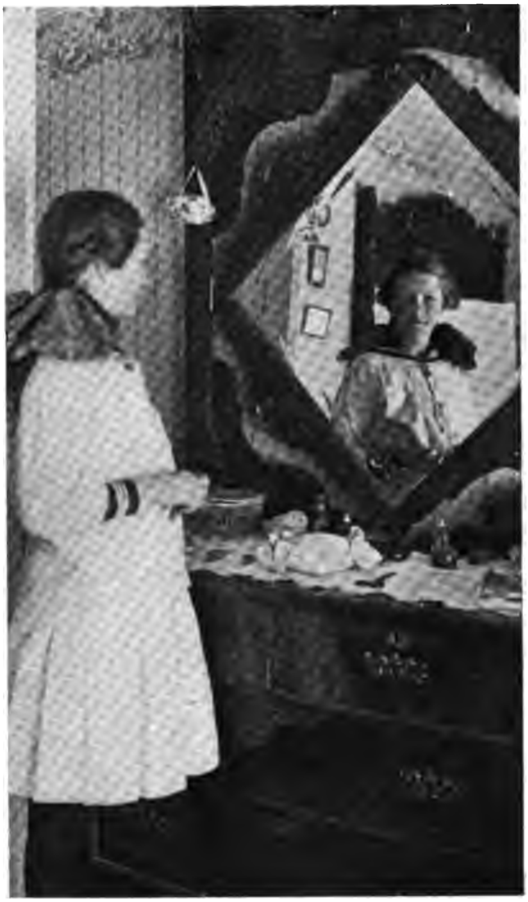
I would not be a carping critic, but I can see only one thing to do which would produce anything bearing any resemblance to a picture. Trim, say, 2⅝ inches from the bottom of the print as it appears in American Photography—1⅛ inches from the top, 1⅞ inches from the left, and ⅛ of an inch from the right. This makes a small portrait of the mirror image which shows rather good lighting. Even then there is a harsh black-and-white contrast in the background.

On the whole, why not leave out nine-tenths of the accessories and try again? — Bert Leach.

This photo is a good example of the idea of combining in one picture both a profile and a full face view of the subject.

The photo in question is to be judged, I think, by our opinion as to how this idea has been carried out.

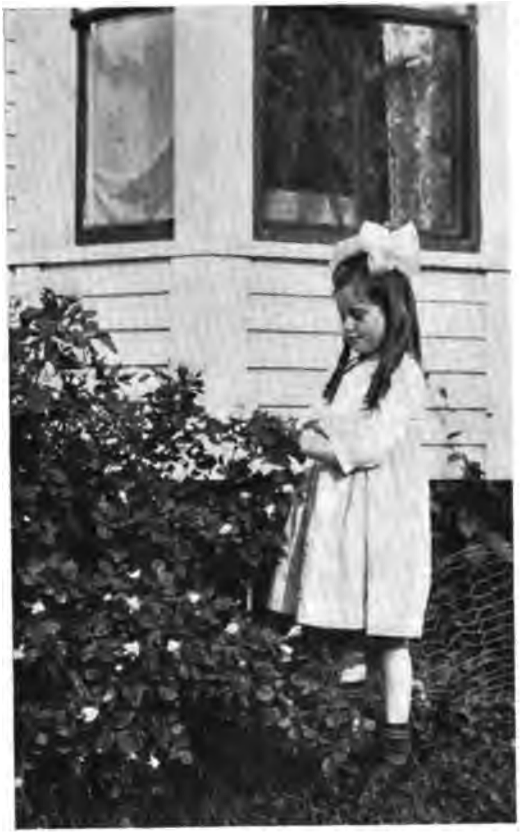
The background is unfortunate, being only suitable for a genre subject, such as a girl brushing her hair, and having no artistic merit in itself. The full face view is good, both the lighting and the modeling being good. The lighting and posing of the profile view are not good. The whole figure is too strongly and flatly lit; also, the face is turned slightly too far away from the camera, causing the profile to be blurred. I think this could have been remedied without detriment to the reflected view. The disproportion in the sizes of the two views is too great for a happy result and might, perhaps, have been remedied by moving the camera slightly to the right and nearer to the mirror. This kind of work presents special difficulties owing to the difficulty of getting both views of the subject well posed and lit, but I think this photo could have been greatly improved if these points had been attended to. As the print stands I think it can be much improved by trimming off the bottom just above the hands and also trimming off the top half inch, thus concentrating the interest on the two views of the girl. — W. A. T. Kidd.



Criticism Print No. 26

There are two outstanding defects in this picture. The first is the multiplicity of objects included. At the best a picture of this kind is almost certain to contain too many things and in this one they are superabundant. The small hanging basket, the objects shown in the mirror and at least half of the articles on the dresser might have been removed.

The other major defect is in focusing. The figure is unpleasantly blurred while the reflection in the mirror is critically sharp. Probably the photog-



New Criticism Print No. 29 **RALPH FARNUM**

rapher intended the image in the mirror to be sharply focused regardless of the lack of definition in the figure. An erroneous point of view, photographically and otherwise. The child is critically dressed and combed and is doing nothing unless engaged in self-admiration. Or perhaps she is merely getting ready to greet our old friends Foreshortening and Lack of Trimming, noticed in the dresser and top of picture respectively.

Lack of detail in the white dress implies over-development of the negative.

The picture fails to tell a story or depict anything which might be characteristic of the person photographed. So we cannot call it a success. A better result might have been attained by posing the child more in front of the mirror and showing her combing her hair or tying a hair-ribbon. This would bring better balancing and largely obviate the foreshortened dresser. Also remove a large part of the impedimenta on walls and dresser. — RALPH BEEBE.

As it stands, Print No. 26 might well be entitl "The Girl or the Dresser" — with the inference that it is the latter which is to be featured.

If such was the intention of the artist, this marvelous masterpiece of furniture design would be better presented with about one inch of girl stripped off from the left side of the print in order that full emphasis may be given to the monotonous, gingerbready curves and details of said Boodwar Atrocity.

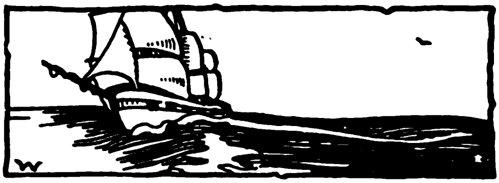
But, as a problem in presenting and emphasizing the idea of "Girl," Print No. 26 offers a simple solution by Subtraction. This idea can be brought out by lessening the amount of spotty detail, — the most glaring instance of which is supplied by the feminine hair receiver, hair-pin basket, or just plain flumdiddie hanging on the mirror support. That one, bright blotch holds the hair, hairpin or straw which breaks the camel's continuity.

Minus this offending basket and 9/16 of an inch of dresser from the bottom up and ¾ of an inch of mirror and wall from the top down, it is barely possible that the real attraction of the print, — namely, the girl — will stand some chance of holding the interest — considering the dresser. — F. H. SHAFFER.

NEW CRITICISM PRINT No. 29

Readers' Criticism Print No. 29 has been kindly furnished for the purpose by Mr. Ralph Franum. It was made with a 3A roll film camera, the exposure being 1-25th second at Stop No. 2 about 2 P. M. in bright June sunshine. The negative was tray-developed in pyro and printed on semi-gloss paper of medium contrast.

For the best criticism of this print received by June 15th a credit of $2.00 towards books of our publication will be awarded. Address the Readers' Criticism Editor, and please write any other communication on a separate sheet of paper.



OUR COMPETITIONS

SENIOR COMPETITION

The first prize in the March competition was awarded to Stefano Bricarelli of Turin, Italy, for his print entitled "Sunshine at the Door." This is an excellent composition, a pleasing bit of story-telling and an excellent bit of technical photographic work. Photographing against the brilliant Italian sunshine and giving full values in both highlights and shadows is a considerable achievement. The placing of the door in the space and of the figures in the doorway is excellently done. This was made in Turin with a 9 x 12 cm T. P. Reflex Camera equipped with a 7¼ inch Zeiss Tessar lens. The exposure in bright light at 11 A. M. in June was 1-5 second and *f*:6.3 without a filter. The Imperial S. S. Ortho plate was developed with Monomet and printed on Gevaert Orthobrom Cream Semi-mat.

The second prize was awarded to Mrs. Sterling Smith for "Portrait of a Child." This is a charming piece of direct and straightforward portraiture properly exposed to attain all values and pleasingly arranged in the space. The softness and beautiful quality of the print are among its chief recommendations. This was made in a studio in San Diego, California, with a 6½ x 8½ Century View Camera fitted with a 7 inch Cooke lens, the exposure with good overhead light at 1 P. M. in December at *f*:8 was 7 seconds. The Eastman Portrait Film was developed with Rodinal and printed on Willis & Clement's Buff Palladiotype.

The third prize was given to Salome E. Marckwardt for her character portrait entitled "Agnes." This also is a simple direct statement of fact which owes its excellence to careful arrangement and photographic technic of the highest quality. Made with a 3¼ x 4¼ Ica Reflex camera fitted with an *f*:4.5 Orix lens of 6¼ inches' focal length. The exposure in bright light at 11 A. M. in December in New York City was 4 seconds at *f*:4.5. The Eastman Portrait Film was developed with Amidol and printed on Wellington White Chamois.

Honorable mentions were awarded as follows:

Innocence	Herbert J. Harper
Moonbeams on a Rocky Coast	T. W. Kilmer
A Nomad	Lyle A. Morse
Individual Training	H. B. Rudolph
The Invalid	Miss Amy Whittemore

Commendations were awarded as follows:—

Congress Hall	A. Crawford G. Allison
Surf Study	Walter L. Bogert
The Encore	F. E. Bronson
Snow Flowers	Franklin Chapman
Frederick Crum, Jr.	Fred. E. Crum
Marian Louise	Fred R. Dapprich
The Toast	Lic. Carlos F. de Moya
Child Portrait	C. F. Dieckman
Spring	Louis A. Dyar
The Story	J. H. Field
Pavers	Don Fitts
In Camp	Geo. W. French
Summer Evening	Chas. T. Graves
Disturbed	C. M. Harris
Sunshine & Shadow	Wm. Hodges
Child Portrait	Harry E. Horrigan
Morning	Jiro Ito
Sluggish Waters	E. Everett Jones
The Pond	John W. Lawton
Annie	Ralph W. H. Leavitt
Caney Fork River Dam & Falls	Frank H. Luwen
Home Sweet Home	Paul W. Macfarlane
The Inner Harbor	Dr. E. L. H. McGinnis
A Toiler of the Tide	Geo. Miller, Jr.
A Lazy Sea	Alexander Murray
Balloons	Louis R. Murray
Jack	Harold B. Neal
Getting Acquainted	D. Prince
Just Sawin'	Jas. J. Ryan
Weed Burning	J. Herbert Saunders
Morning Mist	G. W. Schinkel
The News Boy	Miss F. Schultheis
Our Pet Squirrel	J. A. Singler
Morning Chocolate	James Thomson
A Little Mother	O. H. Walker
The Nurse	B. M. Whitlock
Evening Mist	Wm. J. Wilson
Wilhelmina — A Child Study	W. B. Wotkyns
Morning Stroll	Oliver P. Young

JUNIOR COMPETITION

The first prize in the Junior Competition was given to Theo M. Fisher for his print entitled "My Friend A. J. P." This is a very pleasing portrait, a little contrasty in its lighting but possibly giving more on this account the impression of a sunburned, athletic young man. The arrangement is good and the quality of the workmanship excellent. Made with an 8 x 10 Eastman View camera fitted with an 18 inch Struss Single lens; the exposure in Colorado Springs at 2 P. M. in July in strong light was 3 seconds at *f*:8. The Eastman Portrait film was developed in Rytol and printed on Cyko Plat.

The second prize was awarded to Dr. Hannah G. Myrick for "Roses," a very sympathetic handling of this subject. The arrangement of the flowers is pleasing and the quality of the petals and leaves well rendered. Made with a 2¼ x 3¼ Icarette C equipped with a 3½ inch Bausch and Lomb Zeiss-Tessar IC. The exposure indoors in Massachusetts in bright light at 3.30 P. M. in March was 30 seconds *f*:16. The Eastman Speed film was developed 34 minutes in Rytol of 1-3 normal strength in a tank and enlarged on Wellington BB thick White Mat.

Honorable Mentions were awarded as follows:

After the Shower	Geo. S. Baird
Winter Moonlight	C. L. Bartholomew, Jr.
Winter	Herbert L. Douglas
The Mount Royal Park and View Beyond	T. Ohara
The Concrete Mixer	Jas. Owen
"Towered Cities Please Us Then"	Ford E. Samuel
The Bridge	Geo. A. Smith
Pikes Peak	H. L. Snow

Commendations were awarded as follows:

Red Pines	L. E. Van Allen
A Stop for Inspection	Wm. E. Barr
The Valley Road	Francis L. Bayle
Springtime's River Poetry	John H. D. Blanke
October Day	H. J. Brennan
Sunrise in the Gardens	Miles J. Breuer
The Record Tree	Mrs. H. D. Burns
The Slide	W. H. C. Carriere
An Old Vet	F. H. Chant
Through the Redwoods	H. G. Coffin
Old Mill	J. Crisp
Graceful Nature	Louis S. Crosby
The Blacksmith's Working Crew	G. S. Cunningham
Park in Winter	W. A. Donahue
The Breaking Wave	C. W. Evelyn
Along the Roof of the World	Robt. J. Forbes
Don't Park Here	Edna R. Gordon
Sunday!	T. F. Griffin
Little Grey Home in the West	W. B. Hatfield
Luella	Willard H. Harting
The Spruce	Ralph S. Hayes
The Bath	Chas. Hostetter
Drinking Sap	Geo. Lester Heath
Hospital View	Geo. L. Heatherington
Day Dreams	C. V. Hewitt
Home Portrait	Hubert Hill
Spring Landscape	Garnet E. Jacques
Dreamlight	Mrs. C. H. Johnston
Frances and Jeannette	H. D. Keefer
Pussy	W. Keibel
Mill Pond	W. W. Kuntz
Sisters	Theo. Kusko
Home Art Study	Mrs. B. J. Larson
Good-bye, Autumn, Good-bye	Geo. E. Lewis
Alma	Ladis A. Lisy
The Wood Road	James S. Loomis
Class is Over	Howard E. Louis
Fallen Blossoms	Philip Mehler
Happy Days	Ernest Mosle
Sunset on Rio Grande	Arthur L. Nason
A Spring Scene	Miss L. F. Newton
From Coal Mines to Breaker	Stephen J. Palickar
Walter Earnst	Hugh Palmer
The Cool Refreshing Waters	Aug. W. Paulsen
Peace on Earth	Henry L. Pierce
The First Spring Flower	K. O. Pierson

Beatrice M.	H. W. Pontin
Scattering Clouds	W. H. Pote
The Sail Boat	John W. Redman
Silhouetted	Ronald A. Reilly
Portrait	C. B. Rosher
The Mountain Brook	Howard K. Rowe
The Cabin Trail	F. S. Scheetz
An Icy Morning	L. A. Sharer
On the Shores of Swan Lake	Victor Sheen
Family Group	Edwards H. Smith
A Trapper	H. Sonnenberg
Banks of the Hudson	Henry A. Stainken
Hillside Shadows	Albert A. Sterritt
Fatty at Play	W. L. Thompson
The Bridge	H. H. Van Kennen
Laughing Baby	Harry M. Walker
Evolution of the Lantern	W. A. Ward
In June	B. M. White
The Capitol by Night	E. J. Williams
A Day of Rest	Harold Winslow
Home Portrait	A. S. Workman
The Early Spring Thaw	A. S. Yoshida
Humboldt Park	John B. Ziemanski

ROLL OF HONOR

FIRST PRIZE

J. H. Field 8

SECOND PRIZE

Geo. W. French 8
H. B. Rudolph 7
Alexander Murray 6
Kenneth D. Smith 6

THIRD PRIZE

J. Herbert Saunders 8
F. D. Burt 6
Jared Gardner 6
Wm. J. Wilson 6
Lyle A. Morse 5

HONORABLE MENTION, SENIOR CLASS

Louis A. Dyar 11
Gustav Glueckert 11
W. Kitchen 10
Sotaro Saba 10
Fred E. Crum 9
Herbert J. Harper 9
Edwin B. Collins 8
Juventino Ocampo 7
Clark H. Rutter 6
Oliver P. Young 6
Walter L. Bogert 5
Louis R. Murray 5
F. A. Northrup 5
Robert P. Nute 5
Walter Rutherford 5
James Thomson 5
Elizabeth B. Wotkyns 5

COMMENDATION, SENIOR CLASS

Chas. D. Meservey 21
Walter R. Henry 15
Carlos F. DeMoya 14
Dr. E. L. C. McGinnis 13
Arthur Palme 12
Gus Schinkel 12
J. A. Singler 12
C. M. Harris 11
F. E. Bronson 10
E. E. Jones 10
H. B. Neal 10
Frank R. Nivison 10
B. M. Whitlock 10
A. C. G. Allison 9
J. K. Hodges 9
Frank King 9
Leo Kraft 9
E. W. Quigley 9
Herman D. Warren 9
H. K. Armura 8
Geo. Miller, Jr. 7
Stephen J. Bushya 6
John N. Consdorf 6
Wm. S. Davis 6
Victor D. Elmere 6
R. M. Hart 6
Dr. L. Broe 5
Arthur H. Travers 5

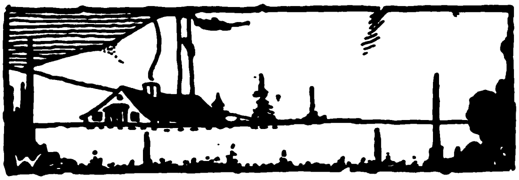
HONORABLE MENTION, JUNIOR CLASS

H. Bowly 5
J. Ito 5
J. W. Jeffers 5
Joseph F. Westgate 5

COMMENDATION, JUNIOR CLASS

John Ziemanski 23
F. H. Chant 22
W. Keibel 22
Garnet E. Jacques 19
Edwin A. Falk 8
R. W. Garwood 8
John P. Geertz 8
Williard H. Harting 8

Edwards H. Smith 18
Howard E. Louis 17
Paul Richardson 15
H. J. Brennan 14
Howard K. Rowe 14
P. F. Squier 14
Wm. E. Barr 13
Talbot Richardson 13
W. W. Kuntz 12
J. F. Webster 12
John Paton, Jr. 11
Alfred S. Upton 11
P. A. Cazaubon 10
Stephen E. Isaac 10
Wm. F. Lowe 10
H. J. Mahlenbrock 10
M. W. Osterweis 10
Ivan Sokoloff 10
A. S. Workman 10
Marjorie Chater 9
John A. Elkins 9
J. R. Frow 9
G. A. Smith 9
B. F. Willard 9
John H. D. Blanke 8
Robert E. Deland 8
Chester Demaree 8
Jas. V. Dunham 8
C. V. Hewitt 8
Geo. S. Matthews 8
Stephen J. Palickar 8
E. J. Williams 8
Walter P. Bruning 8
Miles J. Breuer 7
A. T. Flikke 7
Thomas C. Higgins 7
I. Komaniya 7
Rex G. Mattice 7
Harry Beeler, Jr. 6
Herbert L. Douglas 6
Geo. L. Heath 6
John Janson 6
Mrs. C. H. Johnston 6
Wm. T. McGrath 6
Hannah G. Myrick, M.D. 6
Dr. C. W. Pratt 6
Ford E. Samuel 6
E. J. Browne 5
R. E. Cask 5
J. L. Clyburn 5
James Owen 5
Hugh Palmer 5
Harry G. Pearce 5
Edwin A. Roberts 5
A. M. Tomlinson 5
R. D. Wilson 5



NOTES AND NEWS

Ferraris' Dioptric Instruments. Being an Elementary Exposition of Gauss's Theory and its Application. Translated by Oscar Faber, D.Sc., O. B. E. from Professor F. Lippich's German Translation of Professor Galileo Ferraris' Italian Work entitled — "The Fundamental Properties of Dioptric Instruments." New York. D. Van Nostrand Company, 8 Warren Street. 1920.

This book sets out to give an elementary geometric development of Gauss's theory and then apply the theory to dioptric instruments. It may seem strange that a book originally written in 1876 should still be useful, but it certainly supplies a badly felt want even now. This shows, on the one hand, how very slowly the optical industry has developed in comparison with, for example, aviation, and it also shows the very great step made by Gauss whose work, owing to the abstruse mathematical language in which it was clothed, has only recently been recognized to have immense practical value. The present work is not in all places a pure translation, since cuts have been made where repetition was glaring and descriptions of instruments since much improved have been omitted. Part 1 deals with the fundamental properties of dioptric instruments in general. In Part II, Applications, the first chapter deals with the application of the Gauss theory to the human eye, the eye being considered as a dioptric instrument. The book is technical, but it is one that will be both interesting and helpful to students of optics.

PENROSE'S ANNUAL: Volume XXIV of the Process Year Book and Review of the Graphic Arts. Edited by William Gamble, F. R. P. S., F. O. S. 1922. United States Agents: Tennant and Ward, 103 Park Avenue, New York. Price $4.00.

As attractive as ever, in an orange colored cover, this delightful annual comes before us with its two hundred pages crowded with wonderful pictures and containing twenty-five practical articles of great interest to all who are concerned in any way with any branch of the graphic arts. If the Turnochrome Process print facing page 16 and the Water Colour Facsimile printed and treated by the Nickeloid Electrotype Company were mounted and framed in a gold frame as water-color paintings often are, we do not think that one person out of a hundred could distinguish them from actual paintings. The etchings by E. Hesketh Hubbard, A. R. W. A., reproduced by Photo-Litho Process, on Offset Machine, at Saint Bride Foundation Printing School, are very striking, especially "The Fair Ground" and "Peddlers." The examples of Rotary Photogravure, "Swaingravure," Rembrandt Gravure and of Penrose Velogravure show that these processes have reached a very high standard. The half tones, printed in double-tone inks, hold their own even among the many more showy processes. The color work — three and four color printing, among which we find some intensely interesting pages of brightly colored insects and a page showing some of the variations exhibited by a single species of mollusk, has surely reached a very high standard of excellence. "A Quiet Corner at Sark" is a particularly fine example of three color work.

Everyone who is interested in any branch of reproduction or printing ought to possess a copy of this book for the sake of the information they can get from perusing the articles, and everyone who is interested in pictures ought to have it for the sake of its intrinsic beauty.

DEUTSCHER CAMERA ALMANACH, Ein Jahrbuch für die Photographie unserer Zeit, begrundet von Fritz Loescher, herausgegeben von Karl Weiss. Band 12. Mit 98 Bildern. Union Deutsche Verlagsgesellschaft Zweigniederlassung Berlin.

Among the names of the illustrators of this beautifully printed year book we find the familiar ones of Grete Back, Dührkoop, Hugo Ehrfurth, Nikola Perschied, artists whose work is known not only in their native country, but all the world over and it is because the little book is so full of fine pictures that it would be interesting even to those whose knowledge of German is such as to make it impossible for them to read any of the text. Among the dozen or so articles are — "Photographic Art-in-obtaining-likeness" (Bildniskunst) by Franz Fiedler of Dresden, "The Amateur and Portraiture" by Otto Ehrhardt, "Children and Animals in Photographic Lighting" by Kathe Hecht, "Photographic Bookplates," by Wilhelm Bandelow, "The Outermost Border," by Leonard Misonne. The book includes a "Review of Progress in the Years 1920-1921" and a list of amateur photographic societies.

The Pictorial Photographers of America propose to publish in October 1922 the third volume of Pictorial Photography in America.

The aim of the organization is to make this volume representative of the best American pictorial work. It will be uniform with the two previous editions and will contain about seventy-five prints. All photographic workers are urged to submit prints for the consideration of the Committee of Selection. This Committee is representative of the finest spirit and critical judgment in our photographic field.

In selecting the prints, suitability for reproduction will be a considered factor and to this end technical assistance will be given to the committee of Selection by a co-operating committee from the American Institute of Graphic Arts.

While this book is published by the Pictorial Photographers of America, the competition is open to all photographic workers in America. A copy of the book will be sent to all contributors whose prints are accepted. Last day for receiving prints, May 17, 1922

Entrance blanks may be obtained from Jerry D. Drew, Chairman of the Publication, Committee, 63 Cliff St., New York, N. Y. If there is not sufficient time to send for blanks, contributors may send not more than 4 prints to the Committee. The name and address of the artist must be clearly written on the back of each print, which may be of any size and in any medium. A list of the prints should also be mailed separately to the Committee and it is requested that sufficient stamps be enclosed to cover return postage and insurance.

EDWARD R. DICKSON

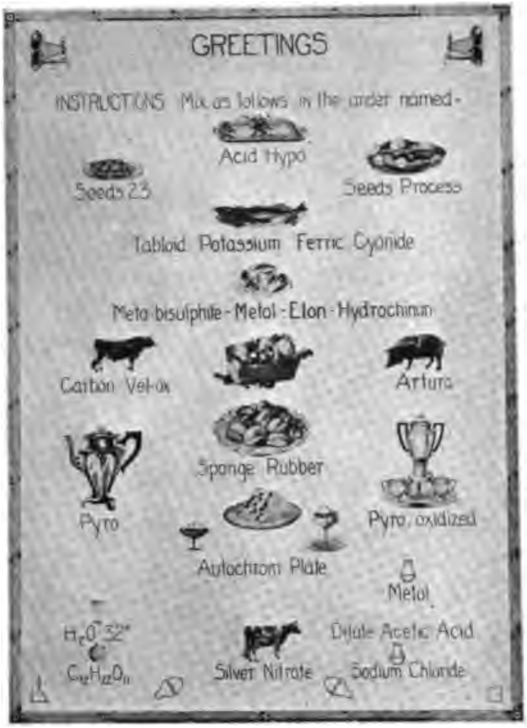
On March 5, 1922, occurred the untimely death of Edward R. Dickson, one of the most eager and gifted workers in the group of men and women devoting themselves to pictorial photography. He was born in Quito, Ecuador, forty-two years ago. According to the custom in Ecuador he, as the eldest son, was sent abroad, to London, to finish his education. He returned home only to find that he had outgrown the thought and customs of his country. He therefore returned to England, and later, in 1903, came to New York. Here he joined the staff of the Marine Engine Corporation, later merged with the Otis Elevator Company. His chief interest, however, was not in engineering, but in art. He was a friend and pupil of Clarence H. White, and for many years devoted every moment of his spare time to artistic creation.

In 1917 he cut loose from his business moorings and embarked on the great adventure of his life. Henceforth until his death he devoted himself wholly to creative work in photography.

The later years of his life were spent in that part of Manhattan, beyond Dyckman Street, known as Inwood. That section of the island he very much loved, and many of his pictures were taken in or around those wooded heights overlooking Spuyten Duyvil. These pictures include a series of illustrations to Stephen Phillips' poem "Marpessa."

It was in October, 1913, that Mr. Dickson published the first number of Platinum Print, "a journal of personal expression." Between that date and October, 1917, eleven numbers of this remarkable magazine were published, the last two under the title of Photo-Graphic Art.

He was one of the founders in 1916 of the Pictorial Photographers of America and was secretary to that organization until 1920. In 1921 he completed the editing of the "Poems of the Dance," an anthology illustrated by his own photographs, which was published in the same year. At the time of his death he was at work on other projects, which would have been genuine contributions. — T. W. KILMER.



ANNUAL DINNER MENU R. E. VANDRUFF

The unique menu card that we have reproduced was used at the second annual dinner of the San Diego (California) Y. M. C. A. Camera Club. The card was designed and executed by Mr. R. E. Vandruff, one of the members. This club has a membership of about twenty persons. Mr. Harold A. Taylor, the well-known pictorialist, is the Club's President and its membership includes Mr. Paul D. Hugon, a pioneer in the world of cinemaphotography, who was formerly associated with Pathe. The activities of the club consist of bi-weekly lectures in the Y. M. C. A. Auditorium which are open to the public and, alternating with these, the club holds midday luncheons at a local hotel, special speakers being secured. These talks are very diversified, the titles of a few of the recent luncheon talks being — "Getting Pictures into Magazines" by San Diego's City Clerk who is also a successful amateur photographer and a writer of special magazine articles; "What Makes the Movies Move," contributed by Mr. Hugon; "The Latest in Aerial Photography," by J. Malta F. Hasse, chief aerial photographer, U. S. N. Air Service, stationed at the Naval Air Station, North Island, San Diego Bay. Outings are held about once a month for members, relatives and friends, on the shore of the Pacific, in San Diego's wonderful Balboa Park, or perhaps in some canyon or along a river gorge. Although the club members have to go fifty miles back into the high mountains if snow scenes are desired during the winter, they enjoy the tremendous advantages that come with the perennial foliage of the trees in the lowlands and congenial climate which renders unknown the chapped knuckles and the "numbed finger on the focusing screw" known only too well by winter photographers elsewhere.

* * *

Captain Harrington W. Cochran, who is stationed at Corregidor, P. I., tells us that the Bureau of Science, Manila, has just completed an investigation of a fungus which, during the wet season, attacks glass. An instance has been found where the fungus actually penetrated the surface of the lens of an instrument to such an extent as to render it worthless. An examination of a number of field glasses used in the army in that locality as to the cause of lens fog has developed that a similar fungus was growing on them. The mycologist at the Philippine Bureau of Science (an American institution) has recommended that all lenses be wiped at least once a month during the rainy season with lens paper moistened with alcohol. Care should be taken not to use too much alcohol, as a rapid evaporation will suddenly lower the temperature of the lens and is very liable to cause microscopic cracks.

* * *

We have received a copy of the News Letter of the American Institute of Graphic Arts. This is the first number of a publication that it is hoped will be issued monthly. It has been written and planned by Edmund G. Gress in a style suggested by the first American newspaper, the *Boston News-Letter* of 1704, and a news sheet published in Boston in 1689. The President of the Institute is Frederic W. Goudy. Any men who love good books, illustration, typography, decoration and printing, who are qualified by accomplishment and interest to be on the lists of the American Institute of Graphic Arts, should send their names to the Chairman, Burton Emmett, 120 West 32nd St., New York. The committee will then pass on the proposals and, if accepted, send a formal invitation with a circular telling about the history, objects and plans of the Institute. The dues are fifteen dollars a year. At present there are about two hundred members in good standing. The membership roll is an interesting one and it is to be published in a few months.

FORTHCOMING EXHIBITIONS

Place	Date	For information write to—
Pictorial Photographic Society of San Francisco, 1st Annual Salon of Photography	May, 1922	H. A. Hussey, Salon Sec. 64 Pine Street, San Francisco, California
Tenth Annual Exhibition by the Bangor Society of Art.	May 1st to May 20th, 1922	Bangor Society of Art Bangor, Maine
Royal Photographic Society Closing date for entries August 25th, 1922	Sept. 18 to Oct. 28	The Secretary Royal Photographic Society 35 Russell Sq., London, W. C.1

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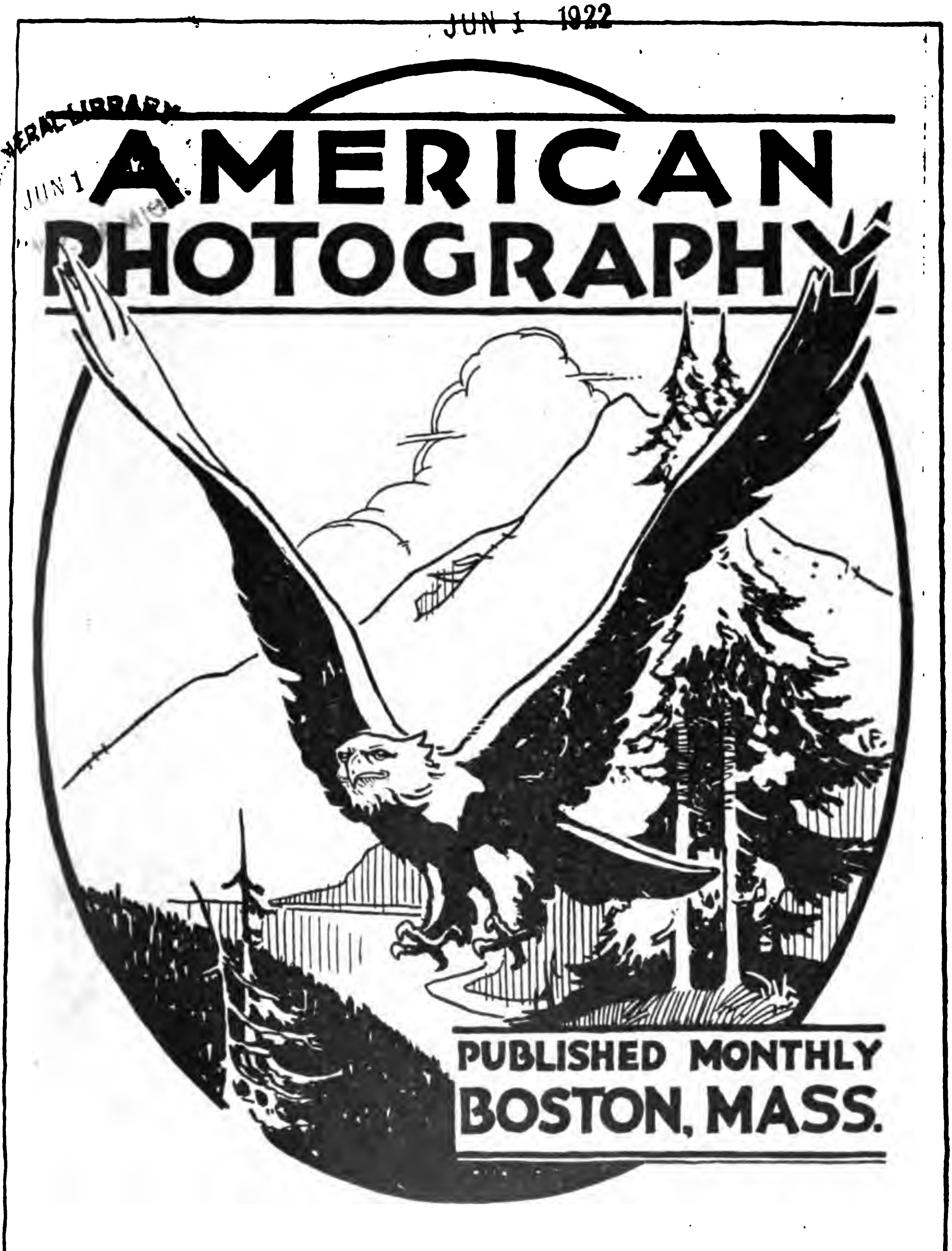

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BOSTON, MASS.

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Edited by

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Editor of American Photography

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AMERICAN
PHOTOGRAPHY

VOL. XVI BOSTON, MASS., JUNE, 1922 No. 6

FIGURE PHOTOGRAPHY

JAMES WALLACE PONDELICEK

NOT every photographer, in his efforts at figure photography, knows enough of the principles of true art and posture to successfully pose his models. This is especially true in the photography of the nude figure.

The true purpose of photographing the nude figure is to secure an illusion of complete repose or unconscious action. The criticism I have to offer on most of the photographs of the nude submitted to me is that first the model was put into position, then told to hold still and the result was a posey picture, a figure conscious of having her picture taken. Another fault I found was that many a good thing was spoiled by the model being conscious of her nudeness. A third was the lack of technique in posture which I will discuss later in this article.

Photographic values are also very much at fault. Some subjects in low key would be more attractive and would tell the story much better if made in high key or vice versa. A great deal of thought must be given to the latter and too much stress cannot be impressed upon the layman to interpret his thought in the proper key or mood; this I'll try to impress with some of my own illustrations.

The selection of the right model for the picture is very important. Many young women who are admirable for the sculptor or painter will not do for the photographer.

The imagination of the camera as a medium of expression is very limited and is dependent upon the control the man behind has over his lens. The camera, as you all know, does not see depth, it sees only the flat plane or surface of its subject, its height and width. The body which, translated into bronze or painted on canvas, displays the beauty of perfect proportions or harmonious effect due to modeling of the bronze or the color in painting is often unpleasing in photographs. The full-fleshed figure of a girl admirably proportioned, weighing about one hundred fifty-five pounds and full of health and vigor, the very roundness that lures the sculptor, appears on the plate as breadth only. This type of figure must be handled with great care, as in the picture of "The Bather," otherwise there will be a display of nudeness and flesh appeal, a suggestive picture without charm or illusion.

To the photographer as to the painter or sculptor, the reason of the nude is its poetry of relaxation and the purity of its unadorned beauty. In the photograph the suggestion that the purpose of lack of drapery is to flaunt the unconventional is ruinous, yet some conceptions especially frank in detail can be made to give only the impression of beauty. The mere femininity of the model is forgotten in her unconscious pose and the symbolization of the artists' message. The success and greatness of the artist who works from the nude is measured by his ability to dare without offense.

The photographer has none of the means which the sculptor or painter has to present his model as an emblem of beauty in feminine form without emphasizing her lack of clothing. His camera must see her as she is and it is by his knowledge of his lens, plate, chemicals and posing that he can accomplish the subduing of the flesh.

The model chosen for this work must be of good breeding, education and intelligence, one who can live her pose and fully understand the photographer's thought. A girl with perfect figure and no intellect will suggest flesh appeal alone. It is in her personality, though no fault of hers, and despite the efforts of the photographer the result will be unnatural and suggestive.

For a picture showing repose and relaxation, I find the best model is a girl who never posed nude before as a model or otherwise, who can appreciate art and possesses considerable intellect. For the picture suggesting action, I choose a dancer who knows the Greek, character and ballet technique and its practical application, besides having the qualities mentioned above.

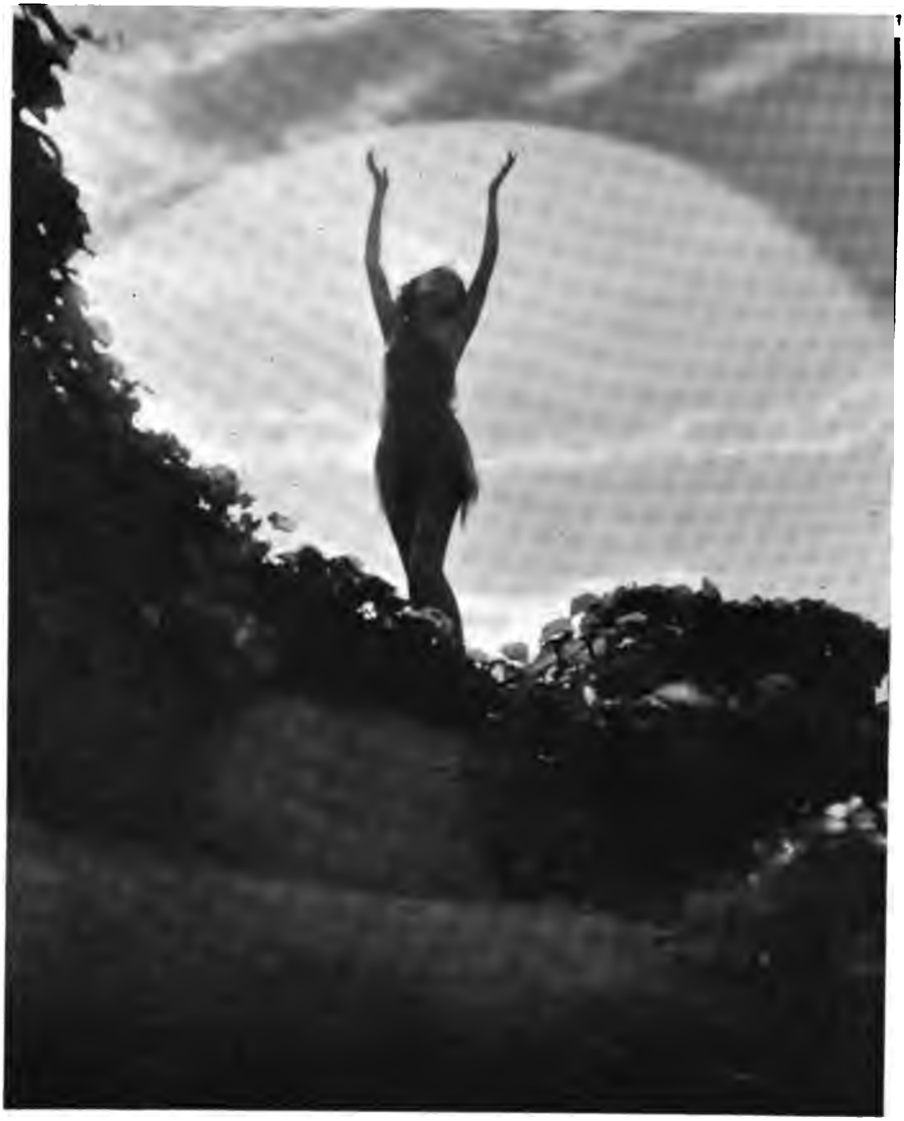
It is almost impossible to get a pleasing result of a nude in action if the photographer does not know the technique of the dance or has not some conception of line and composition and cannot pose his model accordingly. To try to pose a girl who is not a dancer in some active position is just as hopeless an attempt, unless the girl is unusually graceful, the result being unnatural somewhere, either legs or arms or both and self-consciousness.

The knowledge of the dance is very helpful to the photographer, in fact I dare say necessary. Dancing is the poetry of motion. Like poetry and music, to which it is closely allied, dancing, properly called the choregraphic art, reflects its technique in almost every masterpiece either modeled or painted. The dance technique referred to in this article is that of the ancient Greek, the character and Russian ballet.

The special qualities of the less violent Greek dance are a mimetic or pantomime value, showing soft expressiveness and graceful movement. The exponent of Greek dancing, having due regard for mimetic values, employs movements of the legs, torso, head and arms as part of the dance, vivifying it and raising it out of the class of gymnastic exercises. The ancient Greek dancers did not, like our present day exponents, regard curving movements of the arms as the only kind permissible. They did not hesitate to speak in abrupt angles if the exigencies of the dance drama demanded it, although the more stately dances always show the elegant curved positions.

In ballet technique, the arms may fall motionless at the sides, or may be raised in certain positions that are carefully calculated so that they do not affect the stability of the foot position, causing the dancer to lose balance. The hands may pick up the flower-like full skirt. This is about all the arms are allowed to do, with very little pantomime, and even this must follow hard and fast rules. The position of the head is even more restricted. The torso almost ceases to live. The body above the hips becomes merely a decorative adjunct to the dance, the dance being confined to the legs and toes. All this may show forth the dancer's agility and skill, but at best such a dance is nothing more than a beautiful gymnastic exercise of acrobatic order. Therefore the ballet technique very rarely lends itself to nude photography, though the ballet foundation is very useful.

The character technique is pantomime or impersonations of various national dances or customs, such as Spanish, Oriental, Egyptian, Slav, Italian, etc., and though not lend-



THE PRAYER
JAMES WALLACE PONDELICEK

THE
JAME

the spiritualistic hypothesis, for there have been others advanced, without turning to that of fraud. He was, to the last, a member of the Society of Psychical Research. As to Sir William's achievements in discovery and science, the Encyclopedia Britannica gives some account of them. He was a medalist of the Royal Society and president of many learned societies in his time.

Now we come to Professor Charles Richet's investigations at Algiers from August 10 to September 10, 1905. Professor Richet is a well known French savant and was, at one time, president of the Society for Psychical Research.

The phenomena we are about to refer to took place at Villa Carmen, the residence of General and Mme. Noel. Marthe Delanne, daughter of a retired military officer, who was engaged to be married to Maurice Noel, the son of Gen. Noel, was the chief medium, although Aischa, a family servant, took some part also as a medium. I quote from Professor Richet's paper in *The Annals of Psychical Science,* Vol. 2, pages 207-210 and 269-289, of the year 1905.

He tells first of all how the room used was arranged and guarded from trickery. A corner of the room was curtained off for a cabinet. He says, after a minute examination of the room, "I am in all certitude able to affirm that no one could enter the room during the seance."

The phenomenon produced by the mediums was much like that of Miss Cook. A being, Arab in appearance, calling himself Bien Boa, came into existence while the mediums were in sight. "I will establish, first of all, that the personage in question is neither an image reflection in a mirror, nor a doll, nor a lay figure. I have seen it leave the seance cabinet, walk about, go and come. I have heard its breathing and its voice. I have touched its hand several times: that hand was warm and jointed." During the series of seances, Bien Boa was put through his paces, as it were, made to do things, sink into the floor and rise out of it, blow into chemically prepared tubes, float, disappear and reappear, talk and sit for his picture. The cameras used were three Kodaks and three Richard Verascopes (stereoscopic), the latter being wonderful instruments for registering depth, thus allowing one to see in perspective and lessening the possibility of fraud. Magnesium was used for lighting. The article is illustrated with nine cuts made from the photographs taken and show a bearded creature, turbaned and clothed in Arab costume, sometimes fully materialized and sometimes only partly so. The mediums can be seen in some of the photographs and in some parts of them are hidden behind Bien. In two of the pictures a cloud-like vapor is seen floating to one side of the ghostly guest. The article goes into details as to the management of the seance, tells who were present and where they were and records in detail just what occurred. It is too long to quote here in full.

I wish to make myself clear in one point and that is that I know nothing more about this subject than what I have read. I hold no brief for or against. I do not care whether spirits sit for photographs or not. All I can say is that I am neutral on the subject of psychical research. Any student of these phenomena knows that the investigators have amassed an overwhelming mass of data and if he cannot find a new hypothesis that will cover the facts better than the thousand and one that have been tried, he will have to adopt the only one that will explain it all, namely, the spiritualistic hypothesis.

If anything could add to the attractiveness of this Christmas gift the illustration does it. Again the story is all in the picture.

"Kodak As You Go!" The lure of this is likewise complete.

"Kodak As You Go!" Who could resist the appeal of this? What words could strengthen the advertising idea it so pictorially conveys?

"Moments in the lives of children happily caught for all time."

"Kodak As You Play," this might have been titled, with its perfect suggestion of the appropriateness of the Kodak at playtime.

Having created photography for the world, the problem that confronted manufacturers was to create a world for photography. A clothing manufacturer outside the apocryphal Garden of Eden, coaxing an unsophisticated world into a belief in the protecting comfort, convenience and propriety of clothes, would have had pretty much the same advertising problem to solve.

The Kodak was born into a world as innocent of the delights of the pastime it had come to bestow upon mankind, or of the practical and artistic possibilities of this now favorite medium of expression, as our first parents were of the comfort and modesty of—say a Stein-Bloch.

Eastman advertising had to pioneer the pastime itself; plead the joys that lay in wait for the world of potential amateurs; call up the new lure which photography gives to the great outdoors and the interest it awakens and constantly renews in everyday scenes and incidents.

In other words it had to subordinate product to pastime, seek to create an interest in photography for photography's sake, plead the value of pictures as a sentimental record and cultivate in the minds of young and old that love of beauty, which it had been given the means to express. All of which is in a strict sense, propaganda, in the interest of amateur photography.

The advertising means to this end have been, logically enough, photographic illustrations — photography itself used to advertise photography. "Let the Kodak tell the story" is the gospel that Eastman advertising has always preached, and with perfect consistency has been its invariable gospel in practice.

"Kodak As You Go!" Here again the story is complete without another word of comment.

Faith in the photographic illustration to visualize completely this advertising idea has been further emphasized by the unusual brevity of the text. The text remains text without amplification or exposition into the third and fourthly of the obvious. "Kodak As You Go," "Take a Kodak With You," — all the words of the English language, however cleverly fashioned into speech, could not say more. The picture has left no more to be said.

The examples that accompany are fairly illustrative of the character of this advertising appeal — its simplicity, its humanness, its restraint and, above all, its sincerity.

In these, as in all the Eastman illustrations, the lure of the Kodak conspires successfully with the lure of the great outdoors for our beguilement. It may be the lure of travel, of hunting, of fishing, of playtime, or of moments in the lives of children happily caught for all time. Now and then is the Kodak raised to the rank of historian in such dramatic moments as, for instance, the war provided.

And when all is said and done the real appeal for the great majority of Kodaking mankind lies in these records its keeps of events of social, sentimental and human interest. Kodak advertisers long ago discovered that "photography for photography's sake" is after all as rare in this eminently human life as "art for art's sake" and fashioned their advertisements accordingly. The artist of the camera probably needs no such appeal — needs no appeal of any kind. He works because he must — because of the necessity for self expression and the joy that comes from it.

Commercial and Other Uses. — In very wisely focusing on this popular and universal appeal of photography, this advertising has not overlooked its ever extending possibilities into commercial and other fields. Its uses on the farm, for instance, which seem limitless have also engaged its attention with equally happy results.

Has the farmer stock to register, or meadows to drain, or a culvert to build, or ditches to dig, or fences to repair? He is shown in his own farm publications how to utilize photography to these ends. Even the Kodak will serve his purpose in a hundred ways. Where there are hogs to market, for example, sheep ready for the shearing, or cattle to sell, a good snapshot will tell the story, tell it in detail with a realism that neither word nor drawing could hope to emulate. A photograph of the orchard in blossom, foretelling the yield in fall, may even sell the crop on the tree to the buyer in town.

Engineering publications likewise carry illustrations visualizing the many uses to which that profession can put photography. Records of tunnel construction, bridge work, bridge approaches, progress records of all kinds, completed work to show prospects, are all brought to the engineer's attention in a highly suggestive way.

To the manufacturer's attention are brought its practical uses in replacing the bulky samples of his salesmen, or as an aid in "setting up" machinery that has to be shipped "knocked down," or in replacing broken parts, or in safety education.

Lawyers and jurists are reminded through chosen mediums of its legal uses such as the photographing of documents, letters, checks, signatures for identification, contracts, papers too valuable to be removed from safety vaults, finger prints, scenes of crime too remote to visit, and other evidence of a like nature.

In the highly specialized medical field where x-ray photography has, for instance, revolutionized the work of the diagnostician, the further use of photography in detecting, recording and cataloging disease evidence, is set forth.

The application too of aerial photography, — developed during the war to a high degree of perfection, — to peace enterprises, such as coast and geodetic survey, laying out irrigation projects, surveys, forest areas, determining the course of canals, railways, etc., is not overlooked.

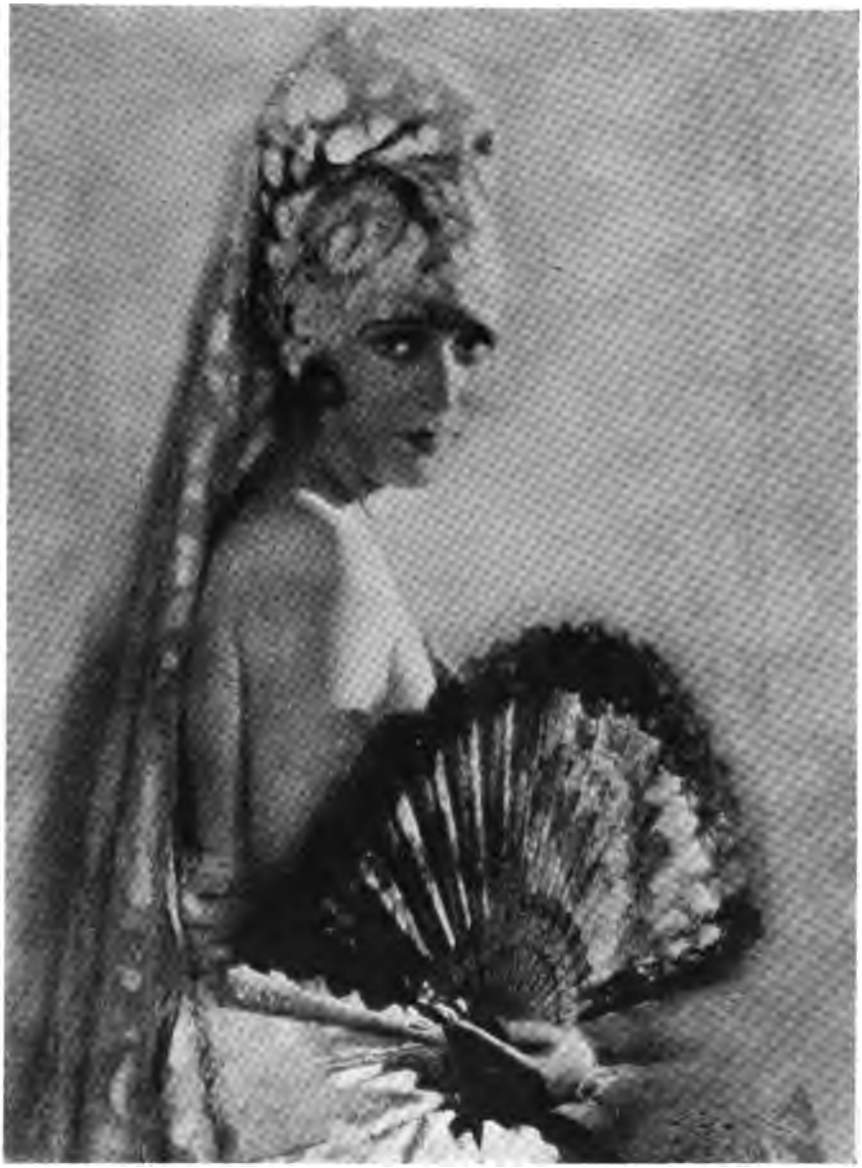
Much of this is, of course, work for the professional and beyond amateur achievement. And in keeping before those interested the ever-widening field which photography may serve, the door of opportunity is likewise kept open to those photographers who are alive to the possibilities of their own craft.

Even the portrait end is not overlooked. The series, "There's a Photographer in Your Town" is constantly urging the public to enter the studio of the local photographer and have its portrait made by the skilled hands of the professional.

In all this advertising, amateur or professional, the Eastman idea is to sell photography. When they sell photography they are satisfied that a fair share will fall to Eastman products.

The proof of the wisdom of this broad gauged policy is the world-wide industry it has created in a little over thirty years. In 1890 a single building with a floor space of 27,500 square feet served all the manufacturing needs of the Company. Today five Eastman plants with a floor area of over 100 acres are in operation in Rochester alone for the manufacture of various types of cameras, lenses and photographic materials.

Kodak advertising has kept pace with the development of the industry. From a six inch single column ad in 1888 to full page spreads in all the leading magazines and periodicals today — from an appropriation of four figures then, to an expenditure of seven figures now, tells its own story.



"MARGUERITE DE LA MOTTE IN THE MARK OF ZORRO"
ARTHUR F. KALES
Pittsburgh Salon, 1922

LENS FACTORS IN EXPOSURE

C. F. STILES

LENSES used at the same relative aperture require the same exposure time." Investigating workers often wonder if this is always strictly true, or if it is only a dogma which has become an accepted standard. Various factors may contribute to cause lenses of the same effective apertures to work at different speeds.

The first obvious factor which might reduce lens speed is the absorption of light by the glass. The ideal glass should be colorless — white is the optician's term — and the presence of any color whatever is proof that some other color is being absorbed. The mere fact that no color can be seen with the eye does not, however, prove the optical transparency of the glass, for invisible light plays some part in the impression of the image on the plate, although it is also true that the majority of the real ultraviolet rays are blocked out by any appreciable amount of glass.

Early in photographic research, the matter received some attention. Monckhoven tried out single lenses of the same focus in flint and crown glass, also in pebble (quartz) and rock salt. In these simple lenses, when colorless to the eye, he could however show no appreciable difference in exposure.

Cole's "Treatise on Photographic Optics" states: "Whenever light is passed through any medium, some part is absorbed even though a thin layer appears transparent. In inferior lenses, the glass is sometimes of a yellowish tinge, and although this may not seem to the eye to cut off much light, yet it intercepts a considerable quantity from the violet end of spectrum, which makes the lens slow in action."

R. W. Wood, in his "Physical Optics," speaks of water, one of the most perfectly transparent substances we know, as being distinctly blue in long columns viewed endwise, showing that it absorbs the red end of spectrum. Glass absorbs light. "The definition 'transparent' is thus seen to be purely arbitrary, there being no such thing in nature as a perfectly transparent substance."

With large lenses, according to Harting, we have more brilliancy with shorter focal lengths than with longer ones. As the lens becomes larger, the glass thickness increases, but in a geometrical ratio. The loss is therefore greater in longer focal lengths than in the shorter. The loss by reflection is independent of focal length and varies with the number of glass air surfaces and the refraction coefficients of the glasses used.

Dr. Rosenhain, an eminent English authority on optical glass, deprecates the practice of neutralizing the greenish color of some glasses, just as the wash lady puts blueing in the tub to make the clothes apparently white. The decolorizers added to the molten glass produce a pinkish tint approximately complementary to the greenish hue, and the result is a glass of neutral hue, actually more opaque than glass not treated. Obviously a pinkish color which will neutralize green will have an absorbent effect on the chemically active rays as well.

A photometric test of a grey lens in one particular single combination showed a density reading of 0.2, which means that 63 per cent of the light was absorbed, and this loss is further augmented by color absorption. Mere density measurements do not show all the losses.

OUT OF WORK GEORGE W. FRENCH

First Prize, April Senior Competition

Testing lenses on white paper may give erroneous conclusions. Any thick combination will act to the eye like a powerful condenser when one side is up, and if the other way up may give a different effect. A colorless lens may appear grey and a grey one may show clear. Most lenses appear greyer on one side than on the other, hence the necessity of basing tests on actual photographic results. When lenses are grey in both directions, it is apparent that absorption is at work.

Derr remarks in his book that not a few lenses discolor noticeably when exposed to light for a long time. Of course, there is no occasion for allowing lenses to remain in bright light except when actually taking pictures, and a cap should be provided for the protection of the lens from both light and mechanical injury.

Lenses which are cemented with Canada balsam may discolor with age. As a rule a good lens will give little trouble in this respect, as the balsam is carefully bleached and the extremely thin film which is used will not appreciably add to the absorption. Moreover, if discoloration appears, the lens can always be recemented by the makers, who are usually glad to have an opportunity to do so without charge.

Several years ago a very curious case came up in the writer's experience. A lens type, of thin construction, required special mounting of a compact nature. For convenience, two of the lenses were separated by a ring of rubber. After a short time, complaints of underexposure began to come in from purchasers, and investigation showed that the rubber had sublimed from the ring and converted the lenses into filters. This economy of construction was soon abandoned.

Some kinds of glasses, with remarkable properties, cannot be used because they are attacked by air and tarnish badly, giving iridescent spots. Repolishing may help in some cases. Others can only be used in constructions where they may be cemented between glasses of a more resisting nature.

A studio lens test is sometimes misleading as to the actual speed of a lens, though possibly not in comparison with other lenses at the same time. A dirty skylight has enormous absorptive powers. A very thin layer of soot will almost completely absorb actinic light. The remedy is obvious.

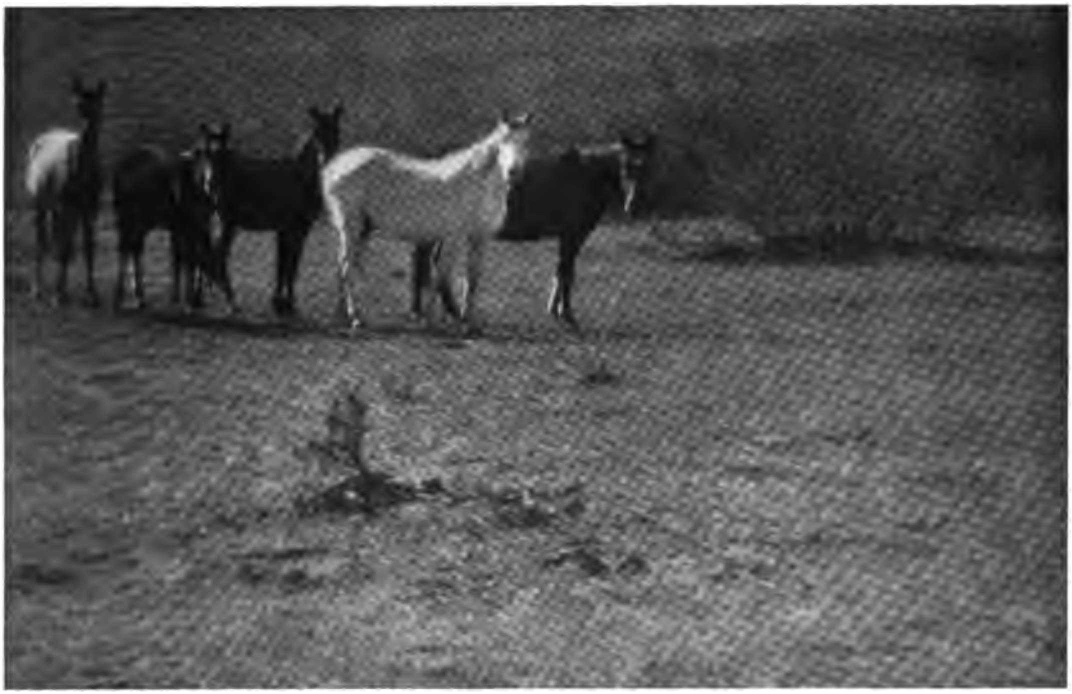
The fact that a lens is corrected for certain wave lengths which are the most important in sunlight brings up interesting conditions in copying, enlarging and portraiture under artificial lights, where the relative strength of the rays may be quite different. Focusing on the nose is sometimes necessary to bring the eyes sharp on the plate. In enlargements an image sharp on the easel may be fuzzy in the print, even at *f*:16. Focusing on a card as much as half an inch in advance of the easel has been found necessary with a very fine lens to get a sharp image on the enlargement itself.

The enclosed arc, for instance, gives two kinds of light, white from the crater, and violet from the arc stream itself. One can readily conceive that such violet light in excess, striking an emulsion which happens to be super-sensitive to this color, may give a false image if the lens is not achromatized for this color.

That the light causing the trouble is not ultraviolet is shown by the fact that thick condensers do not overcome the defect. The use of a filter between the light and the negative has been suggested and this showed improvement in results. Chloride papers, which are more violet-sensitive, show more shift than blue-sensitive bromides. The use of a light approaching daylight is the ideal condition, as lenses can only be achromatized successfully to a definite pair of wave lengths, and these are chosen with reference to normal daylight.

In the case of the Cooper-Hewitt lamps, we have a preponderance of violet light from the mercury vapor, and the same general remarks will apply to any light which differs materially from daylight. It brings up the question of special corrections on lenses where it is known that artificial lights are to be used. Such lenses are supplied, and they allow decrease in exposure time in enlarging from dense negatives, as they do not have to be stopped down. Curiously, some of the older portrait and rapid rectilinear lenses are less injuriously affected by artificial lights than the more modern types.

Mechanical differences in glass or construction may cause differences between lenses. Striations or ripple marks in lenses can be seen with the eye, if present, by looking at the lens obliquely, with a light behind. They show because the glass has a variable density, and are generally absent in good lenses. Bubbles seem to be inevitable. Delamarre says the loss of light from them is inappreciable, the worst case found being a loss in efficiency of 0.02 per cent. Not so unimportant, however, is the special case of a large bubble in



INDIAN PONIES GREGORY L. OLIVER

Second Prize, April Senior Competition

the centre of a wide-angle lens of small diameter. When the lens is much stopped down, the bubble becomes an appreciable factor, as its area is relatively great. A bubble on the surface, making an open pit filled with polishing material, is bad technique of manufacture. Collections of bubbles in layers, like feathers, stop light over an appreciable area of the lens.

To get the advantage of thin lenses, the use of non-spherical surfaces has been suggested. There are great practical difficulties in grinding such lenses. Possibly some means of easy manufacture may be found eventually.

In microscopy, fluorite is used in apochromatic objectives. Stuart and Hasselkus patented a photographic lens, using as nearly as possible a duplicate of fluorspar in refraction, namely the fluor-crown glass of Dr. Zschimmer. Full corrections are said to be obtained.

Lenses have been made, filled with various liquids. Sutton's water-filled panoramic lens dates from the early days of photography. Dr. Blair's experiments with lenses filled with hydrochloric acid were not successful in practice. Dr. Grün in Brighton made a startling increase in speed with a lens filled with highly refracting essential oils, producing lenses of *f*:1.5, *f*:1, and *f*:0.84. A great increase in covering power was gained, but definition was not of a high quality. With this lens, he made snapshots in a theatre at night. Gunn patented a lens with a gelatine filling. Such devices have the fatal objection of varying in optical properties through heat changes which affect the refractive properties.

We have mentioned previously the relative opacity of ordinary glass to ultra-violet invisible rays. The generally accepted visible spectrum is from the deep red, 7594, to the violet, 3968. Some individuals can see a little higher in the ultra-violet. By fluorescent materials, the presence of this invisible light can be demonstrated. It is also true that air is a powerful absorbent of ultra-violet, especially if filled with water vapor or dust. Exposures on high mountains and in winter prove this, as exposures can be enormously reduced. The auroral displays are sometimes visible on high mountains when observers below do not see them at all, and aurora records have been made by photography in such cases in our personal experience. R. J. Strutt announces that ultra-violet waves of 2500 A° have been detected through four miles of air at high altitudes.

Prof. R. W. Wood took advantage of the transparency of quartz to ultra-violet, and by silvering the lens, blocked out the visible rays and made photographs by invisible rays only. The rays passed are of wave lengths 3000 to 3200, just beyond the visual spectrum. The photographs are very interesting curiosities. One exposure, of a partially open window, shows how opaque ordinary window glass is to these short wave lengths.

The use of quartz to shorten exposures has occurred to some opticians, especially in photo-engraving, where time is money and the exposure must be completed before the wet-plate coating dries. For Watson's Actinolux, while working at a marking of *f*:11, is claimed an efficiency of 77.2 per cent whereas the ordinary type is 75.6 per cent. Another lens known as the Apoquartz anastigmat comes from France.

A. J. Newton made measurements on the iron arc spectra, which is very rich in ultra-violet, and found with ordinary lenses, an absorption up to 3170, while with the Actinolux this limit was passed.

Zeiss made quartz lenses in 1900, and applied them to the optics of the ultra-violet microscope, to get higher resolution, and to solve the problem of photographing unstained specimens. Quartz lenses have been suggested for work in artistic portraiture for soft-focus effects. The Hanovia Chemical Co. of Newark are now offering such lenses in a number of focal lengths. The production of quartz lenses has certain technical difficulties because the quartz has to be fused before grinding. It requires very high temperatures, as it is very refractory.

In photo-engraving, it is obvious that a large prism must necessarily absorb a lot of light. Yellowish prisms act as a filter to the lens and depress the efficiency of the whole optical system. A transmission in the violet is particularly desirable, especially with wet plates. These are more sensitive to violet than to blue, where lies the maximum sensitiveness of the ordinary bromide plates.

H. A. Kruss states that while a plate 1 cm thick of boro-silicate crown used for prisms absorbs 2 per cent of violet, the barite crown takes out 4 per cent, and the heavy silicate flint 12 per cent. Doubling the thickness increases the absorption in geometrical ratio. The selection of proper prism glass is therefore of the utmost importance, in view of the violet character of many photo-engraving lights.

Special glass, permeable to violet and ultra-violet, has been suggested as a substitute for quartz. Several lens types were made of this by K. Martin. He showed that ordinary portrait lenses had been made up to *f*:3, but that the optical constants of the new glass were not proper for the necessary lens design, although an uncemented lens could possibly be made. Such lenses, of course, would have reflection losses which might balance the gain in transmission. In special astronomical work, lenses of this glass might find special uses. In this work, the lens produces images of very distant objects and is set by trial and error methods.

In photomicrography, a similar condition obtains. Through the use of quartz condensers and quartz optics, the ultra-violet microscope has come into use. Even the preparation slides have to be of quartz, because an ordinary glass slide or cover glass is

GIRL WATERING FLOWERS STEFANO BRICARELLI

Third Prize, April Senior Competition

opaque to these short wave lengths. The shorter the wave length, the higher is the resolving power. The quartz optics produced by von Rohr practically doubled the resolving power of the highest power oil-immersion lenses. Focusing is done on a fluorescent screen, followed by trial and error exposures. Many organic bodies are strong absorbers of ultra-violet light and we can therefore photograph them directly without staining. The light used is an electric spark, powerful in short wave lengths.

Yellow prisms are likewise of importance in commercial copying cameras for document photography where vacuum-tube lamps are used. These emit light strong in violet rays. Liquid prisms are of course out of the question here, as the prism is used with one face down. Ordinary liquid filled prisms stand on end and have a removable top for filling, and are impracticable for ordinary photographic uses.

Lenses of uranium glass, which fluoresces in ultra-violet, were proposed by Col.

Houdaille. The theory is that such ultra-violet rays as may pass into the lens will be reduced to visible light, for which the lenses could be achromatized. The situation here is like a fluorescent automobile reflector, as pointed out by Luckeisch. The light is scattered instead of focused, as the glass itself acts as a new source of light. Harrison, many years ago, proposed making lenses of colored glass, to act as combined lenses and filters. Most of us would prefer to add the filter, as needed, to a perfectly transparent optical system.

In spectrum photography, researches can be made with apparatus fitted with quartz lenses and prisms or optics made of glass permeable to ultra-violet. Liquid prisms filled with highly refracting liquids are also used, such as orthobromnaphthalin, which has a wonderfully high dispersion, thus separating lines which are close together.

For transparency in the red end of the spectrum in research work on the infra-red, prisms and lenses of rock salt are used in the laboratory. Heat rays are absorbed by salts, such as alum, dissolved in water, which is sometimes used as a filter in projection experiments.

We now come to the losses of light due to the reflections at the glass-air surfaces. The factors controlling this loss are mathematically known, and the loss can be calculated with exactness if the refractive indices of the glasses are known.

A controversy between air-space and cemented types of lenses was bitterly waged, but it is interesting to note that some of the original ardent champions of the cemented lens type finally found themselves with air-space lens types in their own lines. As Derr says, what is lost in one type by reflection seems to be balanced by absorption in the other. Some figures on such a comparison are given later on.

As stated previously, lenses may deteriorate from atmospheric causes. The polished reflecting surfaces should show a fine black polish, without any greyness. Improper cleaning soon dulls the polish, and dust or grease on the lens scatter the light and add to the natural reflection losses. One of the best demonstrations of this effect is to put a lens on an enlarging camera and smooch the lens surface with a greasy finger. Throw the clear light on the screen, through a masked opening. With a clean lens, the mask is clearly outlined with intense black and white contrast; with the dirty lens, the light scatters all over the black mask portion, making an instructive lesson.

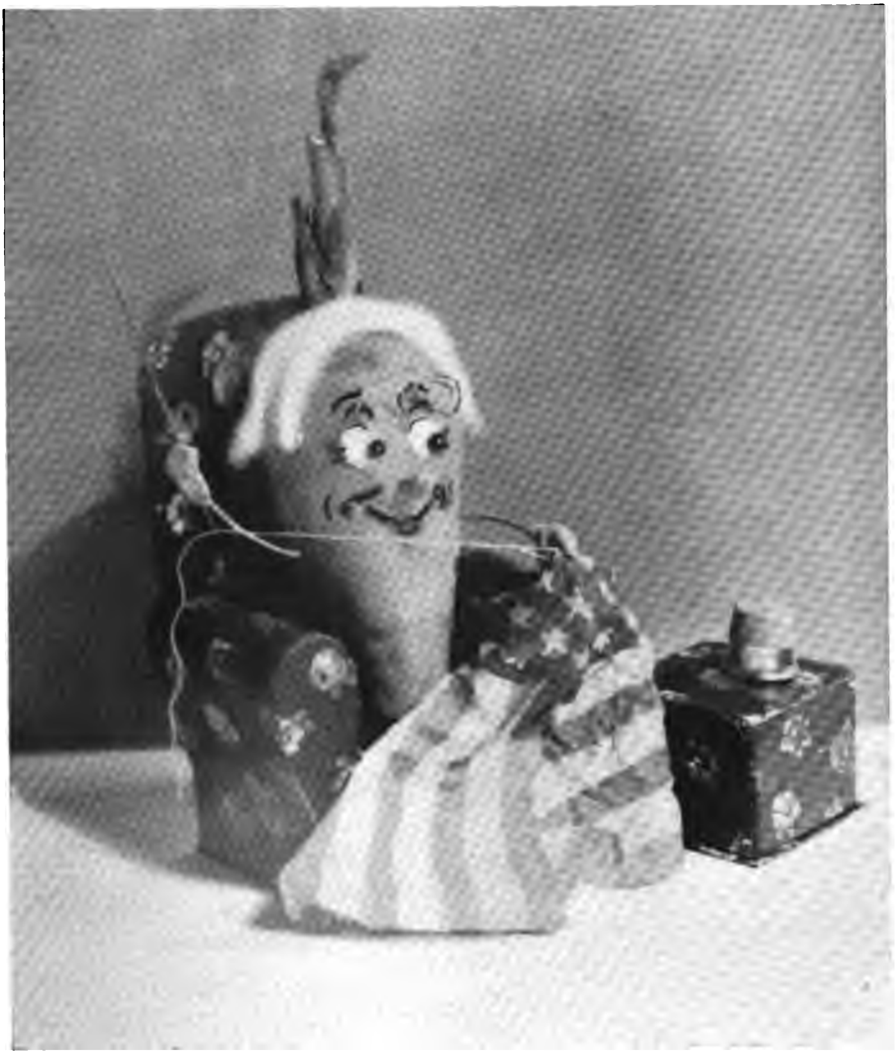
An improperly polished filter or one which has become scratched by too vigorous cleaning will depress the efficiency of a lens. Occasionally we meet with filter flare or with fog produced by greasy coatings on filters, similar to grease on lenses previously spoken of.

A curious property of optical glass is the likelihood of some types to condense moisture on the surface. The drops can of course absorb ammonia or hydrogen sulphide from the atmosphere, which corrode the glass and destroy the polish.

Lenses in photo-engraving establishments probably suffer the most abuse in respect to corrosion. Acid fumes are everywhere, yet, in our observation, the lens is seldom removed from the camera, although it is only in use for less than 44 hours out of a week of 168 hours. The life of such lenses and prisms could be enormously prolonged by putting them away in a proper receptacle when the day's work is done or when not actually in use.

A lens which has become uncemented from a fall or otherwise can be recemented. Where the cement is started we have an obvious loss of light, besides the probability that lenses are decentred and not working correctly. As in the case of tarnished lenses, the makers can usually restore them to normal condition.

In the attempt to gain in efficiency by special means of reducing reflections, little has been done as compared to the work on absorption. H. D. Taylor patented the deliberate



VEGETABLE VAUDEVILLE W. R. BRADFORD

Third Prize, April Senior Competition

Here's little Jane O'Carrot—
 (She thinks she's Betsy Ross)—
For on the flag she's sewing stars
 With energy—and floss;
A poor forsaken seamstress—
 What ever will she do?
Her relatives deserted her
 To join an Irish stew!

darkening of lens surfaces by chemical reagents, so as to get more transmission and less reflection per surface, the net result being higher efficiency of total transmission and greater brilliancy of images. H. Kollmorgen worked along similar lines for efficiency in optical periscope systems.

In telephotos, we have to contend with reflections from mountings, and this light has to be taken care of by diaphragm systems in the barrels. The use of very large lenses on short cameras so that the focal length makes it necessary to pull the bellows out taut, and thus destroy the light-trap action of the bellows folds, is also bad practice

The reflection of light from glass varies according to the refraction constants of the glass used. The angle of incidence also affects the quantity reflected. If the index is 1.5, about 4 per cent is lost; with 1.6, the loss is 5.3 per cent, so that Harting estimates a loss of 10 per cent with two surfaces, 19 per cent with four surfaces, 26 per cent with six surfaces and 34 per cent with 8 eight surfaces. Since the average lens has at least four surfaces, at least a fifth of the light is lost. H. Dennis Taylor points to the possible advantageous use of glasses of low refraction and dispersion for the construction of filters and particularly for prisms.

For simple lenses, *Photographische Correspondenz*, in 1898, gave the following figures.

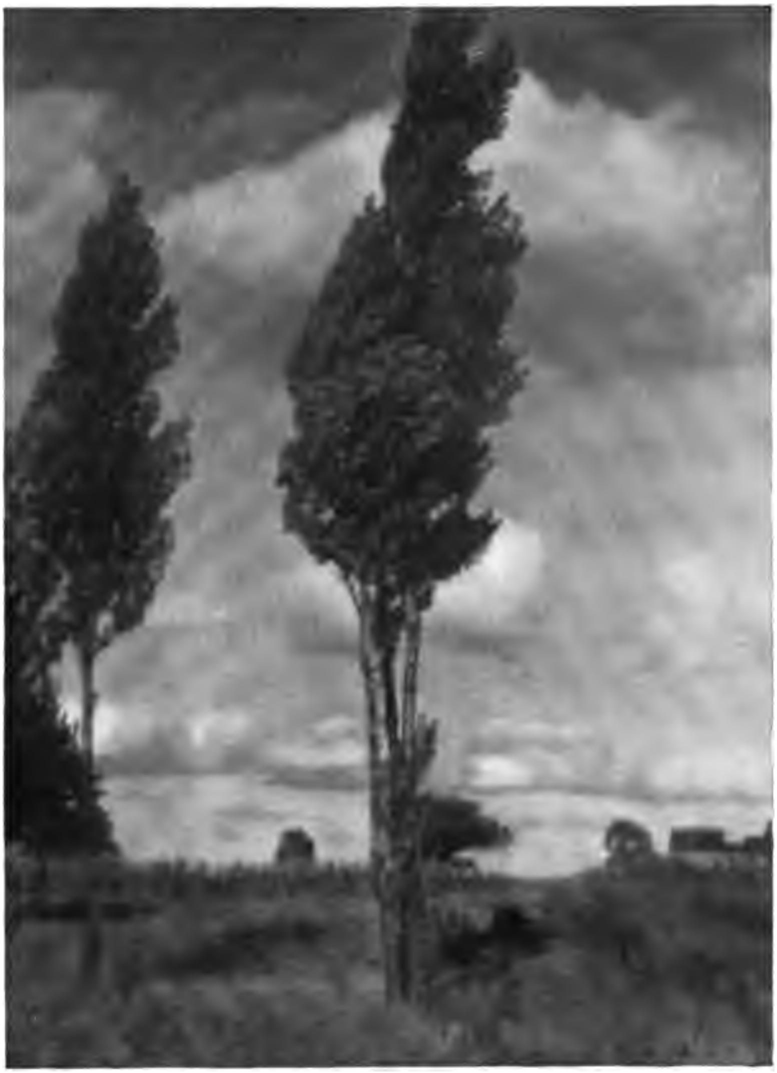
Thickness of lens in centimetres	Intensity of Light Transmitted The Incident Light equals 1		Total loss by absorption and reflection	
	Optical Rays	Chemical Rays	Optical Rays	Chemical Rays
4	0.93	0.84	0.77	0.69
6	0.90	0.77	0.75	0.63
8	0.87	0.71	0.72	0.58
10	0.84	0.65	0.70	0.53
20	0.71	0.43	0.59	0.35
30	0.60	0.28	0.50	0.23
40	0.50	0.18	0.42	0.15

More recently, Dr. Zschokke made a careful investigation of the Syntor and the Dagor as typical of uncemented and cemented types respectively. He calls attention to the speed or intensity of a lens being conditioned by the ration of the aperture to the focal length, which of course does not tell us the quantity of the light that actually reaches the sensitive materials. The measurements are analogous to those on shutter efficiency, showing the relation of the light the shutter should pass to the actual amount it does pass.

Dr. Zschokke calls attention to fact that losses from reflection or absorption such as we have discussed previously are not shown by the lens markings, nor are the vignetting action of a very compact lens mount, the influence of oblique rays or the degree of correction of lens.

The practiced worker knows that the anastigmat gives better details in the shadows, due to needle point definition, points instead of circles of confusion. Of course, definition may be more critical in some zones than others, which has an effect on efficiency, but the principal losses come from reflection and absorption and these can be calculated with precision.

The results are given below in tabular form. In the Syntor, one hundred units of light lose at the first surface 5.47 per cent, dropping to 94.53 per cent. A slight absorption in the first glass drops the figure to 93.91 per cent, and reflection again to 88.77 per cent at the second surface. There is no measurable absorption loss in the air space, and we go on, tracing losses to the ultimate transmission, 65.16 per cent. The last two columns show similar figures for a Dagor of the same focal length, with a higher efficiency, namely 78.66 per cent. The four central columns show two marginal pencils of the Syntor, there being differences



A DAY IN JUNE

W. H. PORTERFIELD

Honorable Mention, Second Annual Competition

in the amount of light lost on account of polarization. The mean efficiency figures as 65.39 per cent. The Dagor figures for marginal pencils are not given as they are approximately the same as central pencil figures.

	Central Pencil Syntor		Marginal Pencils (2) Syntor				Central Pencil Dagor	
Surfaces	1	1'	1	1'	1	1'	1	1'
First	100.00	94.53	100.00	54.04	100.00	95.01	100.00	94.51
Second	93.91	88.77	93.82	87.91	94.79	90.34	93.71	93.68
Third	88.77	84.75	87.91	83.00	90.34	87.16	93.48	93.47
Fourth	84.55	80.72	82.59	78.78	86.74	82.92	92.65	88.81
Fifth	80.72	77.06	78.78	75.05	82.92	77.37	88.81	86.12
Sixth	76.88	73.39	74.69	70.82	78.99	75.84	84.37	84.36
Seventh	73.39	69.38	70.82	66.67	75.84	72.00	84.19	84.16
Eighth	68.93	65.16	66.51	62.35	71.83	68.42	83.43	78.86
	$1'_8 = 65.16$			$1'_8 = 65.39$			$1'_8 = 78.36$	

1 = incident light 1' = light transmitted $1'_8$ = light transmitted at the eighth surface.

In the Dagor, the second and third surfaces, cemented, have little effect on intensity, as the difference in constants between glasses is small. The fourth surface (glass-air), causes a drop to 88.81%. The final intensity is such that a Dagor at *f*:7.5 has same speed as a Syntor at full opening.

For rays at an angle, the conditions are different. The intensity at a point 35 per cent from axis has dropped to 50 per cent of normal. The mount cut-off comes into effect, so actual measurements were made. They showed that changes in distribution of illumination took place when the lens was stopped down, and evenness of illumination was better preserved in anastigmat types than with aplanats when stopped down.

The reason why we do not see this difference in practice is due to the wonderful latitude of our sensitive products. When very short exposures are made, the differences are very apparent. If the exposure is ample for the edges, the theoretical overexposure in the centre does not show. The case is at its maximum in extreme wide angle lenses where illumination at the 90° angle is about one quarter normal, and in case of the Hypergon, at the 135° angle, we have to resort to the star-shaped revolving stop to equalize the illumination between the centre and the edges.

We sometimes see one-sided vignetting effects from reflecting cameras, especially when lenses are stopped down. This is not lens trouble, but error in mounting on the lens board in relation to interior parts which are throwing a shadow.

R. W. Cheshire also investigated the lose of light at glass-air surfaces of various lens types. He took a single lens of *f*:11, 5 mm thickness on axis, working at *f*:11, with the following results:

Surfaces	Thickness	% of Transmission	Equiv. Apertures
2	.5 cm	88.8	*f*:11
4	1.0 cm	78.6	*f*:10.4
6	1.5 cm	69.2	*f*:9.5
8	2.0 cm	60.3	*f*:8.23
10	2.5 cm	52.5	*f*:7.15

Thus a single lens at *f*:11 is as rapid as a four-lens system with eight glass-air surfaces working at *f*:8.23. Violet absorption was not regarded here and this also increases with thickness. The use of proper filters cutting out ultra-violet was assumed, but in absence of such filters, there can be no doubt of the effects, especially if a light high in violet or ultra-violet is used, as in many commercial processes.

THE CASTLE OF MORGAN LE FAY — FRANCIS O. LIBBY

Honorable Mention, Second Annual Competition

The possibility of extra efficiency because of increased transparency of glass will suggest itself, and so it may happen that a four-lens system of glass transparent to violet might counteract a calculated difference on one hand, or depress efficiency on the other.

Other photometric experiments were made to check calculations against results. No attention was paid to the invisible spectrum as it was assumed that filters would be used in connection with proper sensitive material so as to preserve color values in results.

4 Glass Air Surfaces		6 Glass Air Surfaces		8 Glass Air Surfaces		10 Glass Air Surfaces	
Axial Thickness of glass in cm.	% Transmission	Axial Thickness of glass in cm.	%Transmission	Axial Thickness of glass in cm.	% Transmission	Axial Thickness of glass in cm.	% Transmission
.56	77.0	1.58	68.5	1.09	63.5	.98	57.0
.94	80.0	1.58	66.5	1.81	57.5	1.67	54.5
1.09	77.5	1.87	69.5	1.86	61.5		
1.18	76.5			2.13	58.0		
1.59	77.0			2.26	59.5		
1.78	76.0			2.76	59.0		
2.57	72.5			2.80	58.0		
2.59	75.0			4.60	55.0		
2.60	74.0						
2.96	76.0						
3.66	69.5						

From the above experiments, a rule is proposed for an easy approximation to the efficiency. For each glass-air surface, allow a loss of 5.22 per cent, and further deduct a percentage of 2.4 additional for each centimetre of glass-thickness on the axis. Thus an eight-glass system, of 2.8 cm total thickness of glass components measured on the axis, would show an efficiency of 100%−5.22% or .9478% per surface, and we take .9478 to the eighth power and deduct further 2.8 or 2.4% or 6.7%. Total transmission becomes 58.4%.

In percentages, we have $(.9478)^4$ as 80%, $(.9478)^6$ as .73%, $(9478)^8$ as 65% and $(.9478)^{10}$ as 59%. Two glass-air surfaces therefore are equivalent to 4 cm of glass.

Some makers of six-surface anastigmats, *f*:6.3, speak of greater depth-advantages where comparing these with lenses of more reflecting surfaces. An aperture of *f*:7.2 in six-surface lenses is claimed to be as light-efficient as full opening *f*:6.3 in a ten-surface system. Of course, this figure will vary greatly as the size of the lens increases. Minimum exposures will undoubtedly show differences, but ordinary or full exposures cover up such variations owing to the latitude of modern sensitive materials.

Shutter efficiency may neutralize lack of lens efficiency. A less efficient type used with a focal-plane shutter may actually be higher in total efficiency. In some fittings on compact cameras, sacrifice of speed results because shutters are not as large as the full opening of lens. The Compound No. 1 allows a maximum speed of *f*:6.8 if lenses of the focus ordinarily recommended are used, the diameter of the shutter aperture being smaller than the effective diameter required for *f*:6.3.

Perhaps we may have in the future, a fast grainless emulsion with such speed that we can take advantage of the high efficiency of the miniature camera lens. An enlarging apparatus of optical precision would be a necessary adjunct.

AN INEXPENSIVE SOFT-FOCUS LENS

L. M. A. ROY

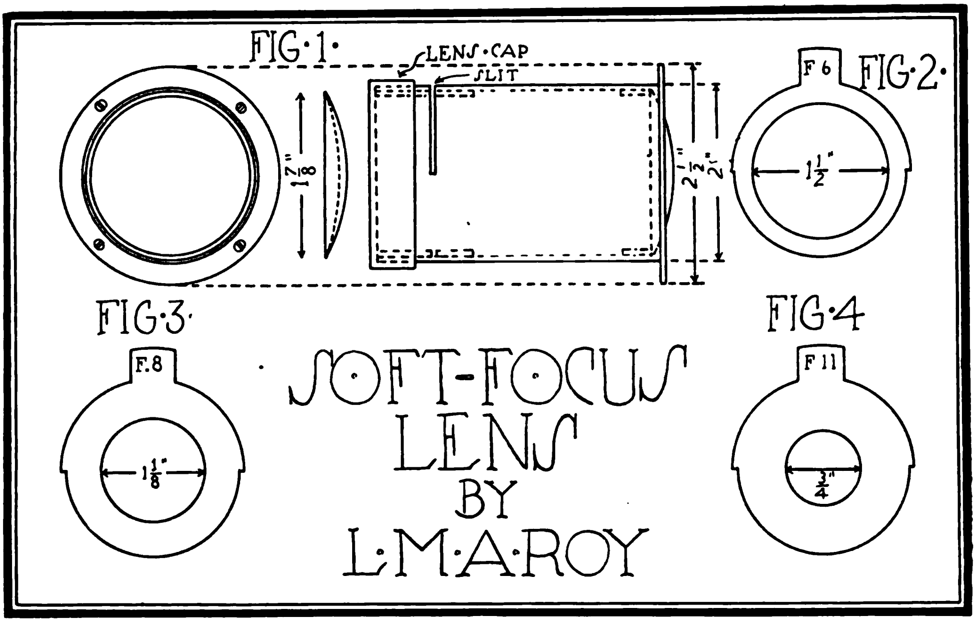
POSSIBLY this article will be useful to those pictorialists who wish to obtain soft-focus effects, but who do not feel that they can afford to pay the price which semi-achromatic lenses usually sell for. Then too, many advanced workers, who perhaps own one lens of this type, would like several of different focal lengths, which could be placed, as desired, in the same lens tube.

Of course, it must not be supposed that such a lens as the one about to be described will produce the same effects as the high-priced lenses which are now on the market, but anyone who experiments with this lens, will be surprised with the pleasing results obtained with it.

First, procure from an optician or dealer in optical goods, a spectacle lens, described as Meniscus (Round), 47 millimeters focus, Plus 4.50, Curve 0. (This is the description given by the Bausch & Lomb Optical Company, but other lens manufacturers could probably furnish the same lens.)

This will cost very little; the writer purchased one, several years ago, for twenty-five cents each, but they may cost somewhat more now.

These lenses come in all focal lengths, so the pictorialist, with little expense, may have quite a variety, but the one described is nine-inch focus, and perhaps a good one for average work.



SOFT-FOCUS LENS

BY L·M·A·ROY

Now decide in your own mind what focal length is wanted, and go in and buy it, but don't ask too many questions of the clerk who sells it.

If you do, you are lost, for he will begin to ramble along about lens curves, diopters pluses and minuses, etc., etc., and will so bewilder you that you will probably decide that you don't know what you want, and go away without any lens at all.

Having got the lens, however, the next thing is to mount it in a shutter or tube; it may be that you have an old one which will answer this purpose, but if not, a suitable one can be made of brass or tin, or even cardboard. Perhaps you can find a small round tin box, such as a baking powder or spice tin, about two inches in diameter, and three and one quarter inches long, which will be just the thing after the bottom has been removed. The tube made and used by the writer is of tin, and, while not as nice looking as brass, is very durable. Do not let the matter of a lens tube prevent you from fitting up such a lens, as a cardboard one will answer very well, and costs nothing but the time of making it.

The inside of the tube should be one and seven-eighths inches in diameter, or just large enough for the lens to slip in. A slot must be sawed or cut crosswise, and half way through the tube, in which the stops or diaphragms can be slipped.

At the back of the tube, a flange two and one half inches in diameter should be fastened, to hold the tube to the lens-board. The inside diameter of the flange should be one and three-quarters inches, or smaller than the diameter of the lens, so as to keep it from coming out of the back of the tube. The lens is now placed in the back of the tube with the convex side out (See Fig. 1), and a ring of flexible cardboard is glued in to hold it in place. A ring of cardboard is glued in from the front of the tube to the diaphragm slit, and another strip about one half-inch wide is glued on the other side of the slit, thus leaving a small space, which holds the diaphragms in place. The interior of the tube is now painted dull black, or lined with black velvet, to reduce reflections.

Some diaphragms will be needed, and two or three will be sufficient. These are made of thin metal, such as brass or tin, preferably, but can be made of bristol board. The focal length of the lens described is approximately nine inches, and it should cover a 4 x 5

OLDEN DAYS L. M. A. ROY

or 5 x 7 plate. The lens at full opening works at about *f*:5 or one-fifth of its focal length, which is rather fast; it gives a very soft image. The other diaphragms can be *f*:6, with one and one-half inch opening, *f*:8, with one and one-eighth inch opening, and *f*:11 with slightly more than three-quarters of an inch opening. These are rough measurements, but are accurate enough for practical purposes.

If you are using a lens larger or smaller than the one described, and do not know the focal length, focus sharply on some distant object, and the distance from the lens to the ground-glass will be the focal length. Then divide the focal length by the number of the stop wanted, and the result will be the size of the opening. It is not advisable to use an opening smaller than *f*:11 if soft pictures are wanted. The diaphragms should be painted dull black and marked with their *f* numbers. Figures 2, 3, and 4 in the sketch give the size and shape of the diaphragms. Should you not have a shutter that will fit your lens tube, a lens cap must be made of cardboard and painted dull black inside.

This lens can only be used successfully with a camera which has a focusing screen. It cannot be used on kodaks, or fixed focus box cameras, as, to get the desired results, the image must be focused on the ground-glass. It must be noted and this is *very important*, that as these lenses are not corrected for color, after focusing, and before the exposure is made, the ground-glass *must be moved toward the lens*, about 1/40 of the focal length of the lens, or in this instance, from 1/8 to 1/4 of an inch. This allowance must be made, as the blue rays fall in focus somewhat nearer the lens than the yellow and red rays. The writer uses this lens on 4 x 5 plates, and finds that this focal length gives very good perspective, and the negatives enlarge very nicely. Also it was found that with this length of lens tube exposures against the light were satisfactory, and especially so,

THE PATH L. M. A. ROY

when Eastman Portrait Film was used, as this overcame halation.

With all soft-focus lenses, experiments should be made with different openings and the results noted. No one can advise just how such lenses should be used, but a few trials will give the worker an idea of what can be done with them, and having certain results in mind these can be worked out.

It is always desirable to give full exposure, and orthochromatic plates and a ray filter will generally give better results than ordinary plates.

Before closing, it would be well to say, if you do not secure the desired results first, do not blame the lens, as very beautiful pictures can be produced with such a lens, when properly handled. The illustrations accompanying this article will give some idea of what the lens will do, and it is hoped that many pictorial workers will take advantage of the beautiful effects obtained with this inexpensive lens.

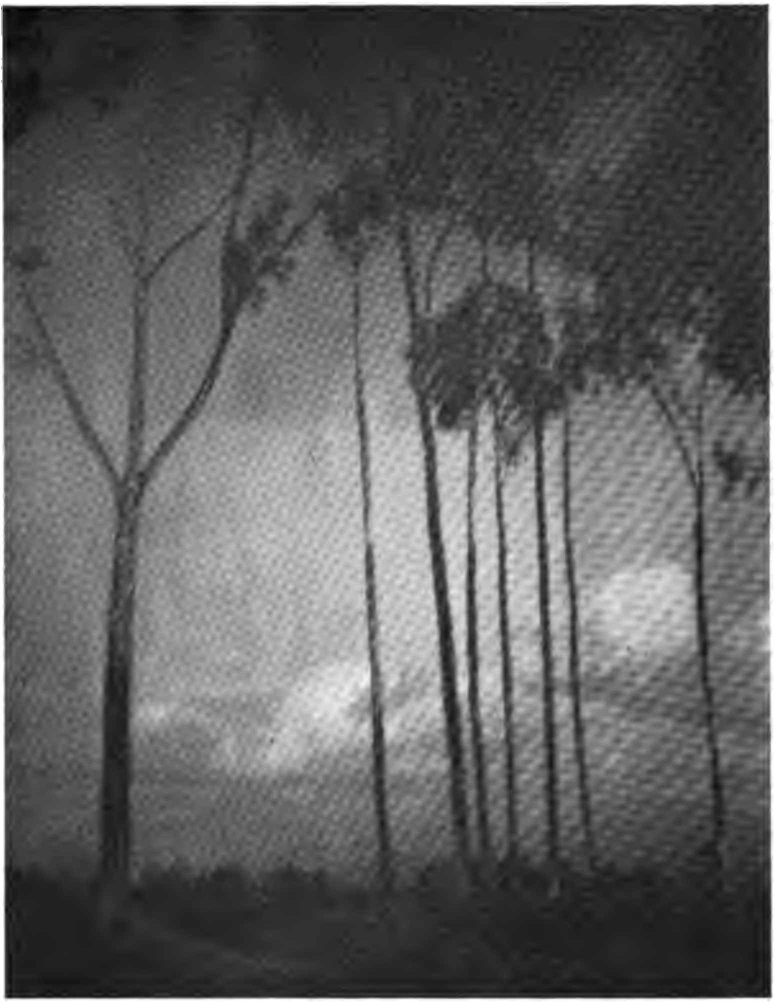
A convenient intensifier is made by dissolving 100 grains of potassium bichromate in 10 ounces of water and adding 1 dram of concentrated hydrochloric acid. This bleaches the negative quickly, after which it must be washed until free of bichromate, that is to say, until no yellow color remains in the transparent parts. The density increase comes by redevelopment. If amidol is used, the redevelopment will proceed without previously exposing the bleached plate to light, but if metol-hydrochinon is used, the bleached plate must be exposed to light before redevelopment.

PHOTOGRAPHY AND THE ART OF PORTRAITURE

BASIL LOOKER

THE art of portrait painting is becoming more and more exacting. Times have changed since the brilliant sketches of Romney and Reynolds, either of whom was a craftsman to the finger-tips, sufficed for satisfactory statements of character and personality. Perhaps indeed we do not know how satisfactory they really were at the time; but it is safe, I think, to say that they were so to a degree largely in excess of that which they would reach today, as convincing examples of personal portrayal. Reynolds painted women like a normal and healthy gentleman, possessed of an adequate artistic equipment, regarding the sex with an admiration that was manly without coarseness. How close was his realization of likeness we are left to surmise, but does it not strike the beholder as, in the main, rather general, generic, and not special and strongly individual? Is it not often woman, the sex, the femininity, the charm, rather than some Lady Hermione or Countess Clancarty? The task of the gentleman behind the brush is more complex today. He may be just as wholesome in his courteous regard for the adorable sex of his sitters. Sex, femininity, charm, are all appreciated, but his portrayal must contain more than this — it must be Lucy, or Margaret or Joan, or they will have none of it. The conditions are the same when the subject is a male, and the veriest layman, it would seem, in matters artistic, is, in this age, a trained observer in matters of character. The truth of this statement was perhaps most strongly emphasized in the mind of the writer, when one of his friends was called upon to paint the portrait of a child no longer living. The only data were several photographs, by an amateur, and the vivid recollection of form, feature, and manner on the part of parents, and sisters and brothers. The definiteness with which these members of his family hinted at and recalled the absent one's traits, way of looking at you, the nearness of the eyebrows to the eyes — the pucker of the mouth, the form of the upper, and retreat of the lower lip, the form the forehead took as it melted into the hair, characteristic posture when standing, and numerous details of coloring were evidences of close and almost cultivated observation. The children as well as parents showed a truth of vision that was remarkable, and eventually caused my friend and myself to turn our thoughts again to the problem of modern portraiture and its exactions, as compared with its practice in the past.

What has led to these conditions in the portrait painter's art — this demand for closer verisimilitude, although perhaps, alas, for no higher aesthetic quality or charm? We think photography, undoubtedly. With a camera practically in every household, proportion, relation of features to the mask of the face, form of forehead and chin — general physical impression indeed of the individual head and figure — are now unconsciously absorbed by the layman. It is among his very diversions and amusements to acquaint himself with the structure of the human animal, and this influence reacts upon the portrait painter. How far this is good, and of advantage to his art, we will endeavor to define. In any event it has augmented the difficulties of his task, but it is none the less likely to prove a veritable boon. In many cases the portrait of the past depended for its success upon the familiarity of its accessories, and general aspect. The familiar ruff or waistcoat, complexion, and posture sufficed to fasten identity on an individual to the eyes and mind of those unused to the habitual presence of graphic delineation of the human figure. But



EUCALYPTUS
ELEANOR L. SMITH
Honorable Mention, Second Annual Competition

do not let us underestimate the educational value of the object lesson. The kindergarten system is not potent in childhood only; and it thus comes to pass that the artist is sometimes surprised at the fidelity of observation concerning proportion and cast of feature which he remarks in persons uninitiated in the aesthetic laws which govern the painted image of an individual. The photograph never supplies this finer quality—the machine cannot become sentient, and appropriately present in its complex mystery, a personality. But it can, and does often, reproduce with faithfulness the individual conformation. This, the painter of to-day, as opposed to him of earlier times, must equal. Now, what superiority, over the older painters, of hand and sight, does this new factor in portrait painting call for? Mainly, we believe, this — a truer draughtsmanship; and also a greater fidelity in the observance of "values;" for, through the approximate correctness of the orthochromatic plate, the public, without always knowing it, has become sensitive to this kind of truth, also. By "values" we mean the relative force of light and dark in an object, be it caused by color, or light and shade. The camera, less sensitive than the human eye, gives these variations approximately only. The earlier masters, with few exceptions, did not achieve this. And also in correctness of external form and proportions photography excels them; while the painter today must equal photography in this respect, and surpass it — far surpass it — in matter of "values."

The debt to portrait painting of photography is the pace photography has set in the matter of individual fidelity, the close definition of form. The portrait today, as a work of art, must now leave its mechanical competitor — but it has been forced, by reason of this competition, to render a stricter account of itself than that demanded of its forbears.

Photography, then, has created for portraiture a public of keen-eyed critics of its verisimilitude, but it may be doubted if it has advanced that public in its appreciation or judgment of a work of art.

MY WORK BENCH

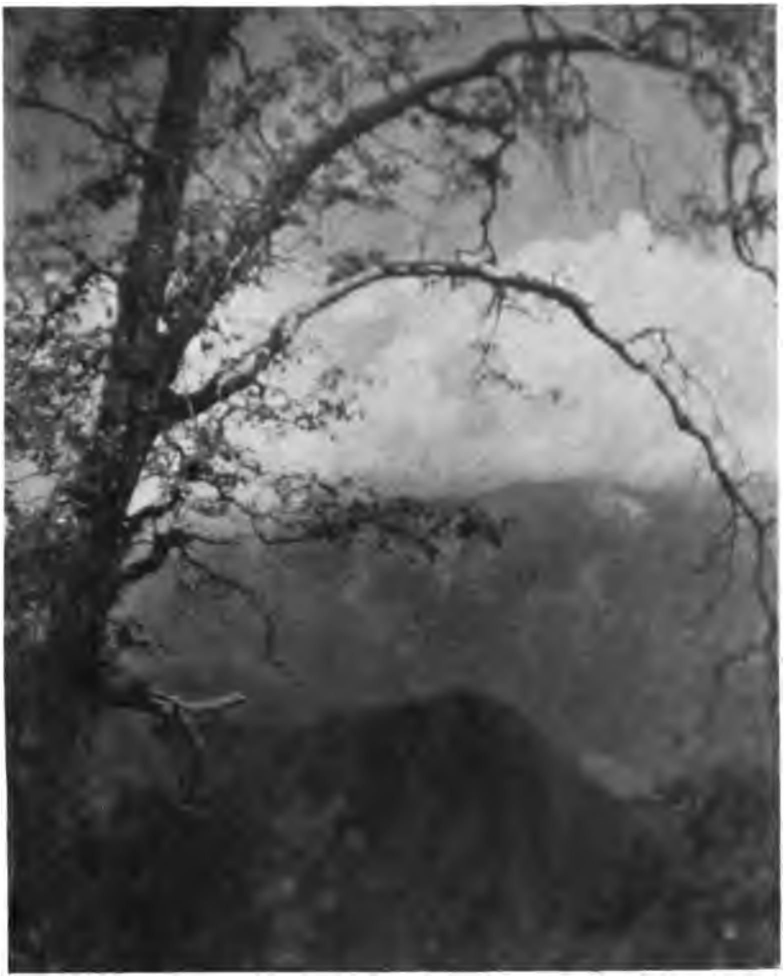
ROLLAND L. WELKER

AFTER the negative comes the print. Too often the amateur, in arranging his workroom, thinks only of his convenience and ease in securing as good a negative as possible with a minimum of labor.

The securing of the best possible print from a negative is often a matter of chance equipment and somewhat haphazard methods. There are no simple conveniences for getting prints of a uniform character or quality.

With but little expense and not much time, by the aid of such tools as are usually at hand, one can make what I call "My Work Bench" which will simplify the making of prints, give ample facilities for such dodging as may seem best to the operator, and secure a uniformity in prints equal to those that are turned out by any professional.

As to the size of the bench this, of course, must depend upon the available space. Too large a bench is not advisable. One is tempted to spread things out too much so that they are not readily found when wanted. Twenty-four inches wide by about eight feet long seems to prove the most convenient. Twenty-eight inches high is advisable as this permits one to remain seated while working over the trays without placing the arms and shoulders in an uncomfortable position.



THE MOUNTAIN
J. D. BOYER
Pittsburgh Salon, 1922

A BIT OF WINTER SCENE A. S. YOSHIDA

First Prize, April Junior Competition

Construct the bench as best suits your convenience according to suggestions in the above paragraph. Secure a piece of plate glass or two pieces of double strength glass 11 x 14 inches in size. Most dealers in plate glass can supply this at small cost, as it need not be polished, but can be cut from a piece of salvage glass that they usually have on hand. About four feet from the right hand end of the bench cut an opening 10 x 13 inches. Around this opening cut away enough to make a rabbet all the way around, half an inch wide and as deep as the glass is thick. On the underside of this opening fit a box three inches deep. Make the side of the box towards the front of the bench in the form of a door that may be opened so that any changes in light bulbs may be made when necessary. The sockets for the light bulbs should be on the right and left hand sides and one on each side will prove to be sufficient. Fit a piece of orange fabric on the under side of the glass and put in this opening. If the fabric is, say, 12 x 15 inches, it will come up around the edges of the glass and the weight of the glass will hold it in place without fastening. The object of this box let into the bench is to provide a place on which to adjust printing masks and load the printing frames. Both hands are free for this work and it can thus be done more quickly and more accurately than when one has to hold the frame up to the light to see if the mask is in proper position and paper is placed squarely. In this position also, after adjustment is made, all can be held in place with one hand while the back of the frame is placed in position and fastened.

The light for printing is placed to the left of this opening. Make a box 12 x 16 inches and six inches deep. Five lamps, three on one side and two on the other, placed alternately so that they overlap, will be enough to give an ample light. The bottom of this box is left open and a half inch rabbet is made all the way around. On this rabbet rests a ground glass to give good diffusion to the light. In wiring the lights in this box, have the ends of the wires lead to a push button in a treadle at the operator's foot. This makes it very convenient to turn these lights on and off so that they burn

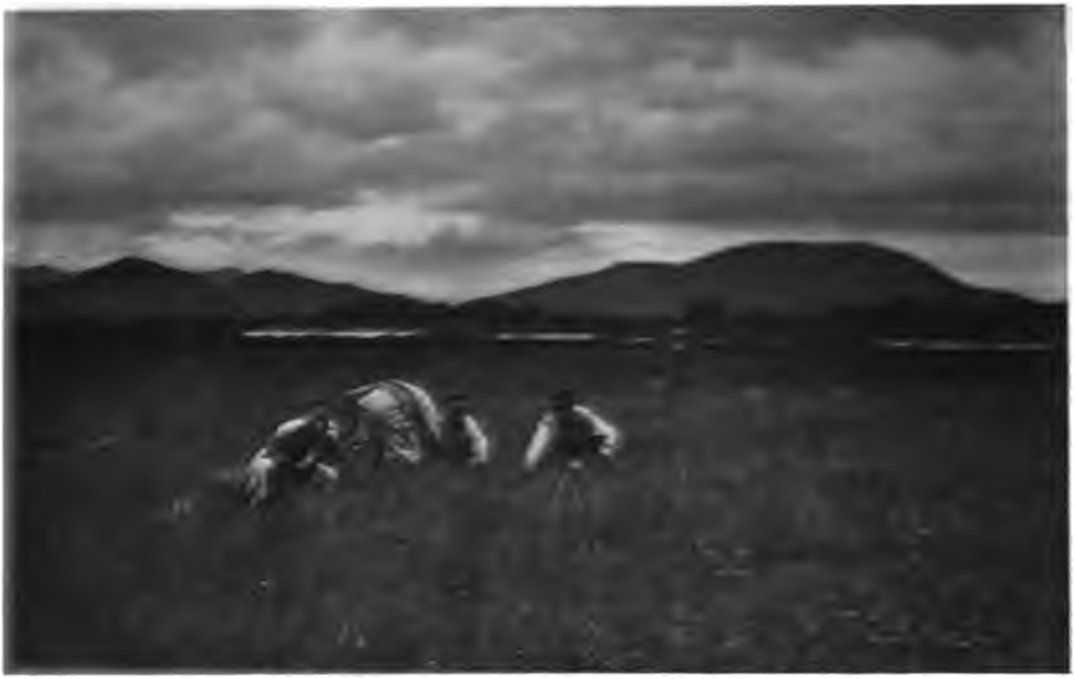
NOCTURNE — MILTON GOLDSTEIN

Second Prize, April Junior Competition

only when in actual use. Just a word of caution; be sure to get a push button that is heavy enough for the voltage of your light current. The button ordinarily used for doorbells and annunciators is not heavy enough and so is apt to arc and cause trouble. A shelf or platform under the printing light should be movable so that the distance between the printing frame and the light may be adjusted to suit the negative and the grade of paper in use. Thin negatives give the best results when printed some distance from the light, while the denser ones are exposed close to the light so that it will more easily penetrate the highlights. With the printing frame lying on this shelf any of the usual methods of dodging and shading may be employed to the best advantage.

The interior of the two boxes for lights should have two or three coats of white enamel. The entire surface of the bench might also be treated in the same way, as such a finish aids materially in maintaining cleanliness.

No attempt is made to give a list of the materials needed, as they can often be secured from pieces of lumber about the premises. The bench itself might even be a discarded office desk if such a thing happens to be available, in which case the center drawer would provide the box for the adjusting light and the tier of drawers on the left could be removed to give space for the printing lights and the adjustable shelf for the printing frame.



THE GRASS CUTTERS C. H. Kragh

THE GRASS CUTTERS

It is a little difficult to make definite statements and say that such and such a thing is wrong because there might be conditions in nature that would account for some unusual appearance and what we considered wrong might really be quite correct. In "The Grass Cutters" the effect conveyed to us in the print before us is that the distant mountains and the sky are too heavily printed and that consequently they appear to come forward too much and the effect of distance is lost. This may be due to some peculiar atmospheric conditions that prevailed at the time, and as the picture was made in China, we do not feel competent to make any definite or authoritative statements on this point. We have seen just such an effect among the mountains in New Hampshire on an unusually clear day, when the distant hills across the lake appeared to be quite close at hand and there was no aerial perspective. Apart from its heaviness, the sky is fine and the whole picture is attractive and simple. The group in the foreground is well placed. Made with an Adams Minex quarter-plate camera, Goerz Dagor lens of six inches' focal length, used at *f*:6.8, exposure 1-10 second, diffused light at 4 P. M. in September, Ilford Zenith plate, developed with pyro-soda, enlargement on Kodak Royal Bromide paper.

HANDS

The more you try to pose hands the more likely you are to get into trouble. Never call your sitter's attention to them — this spells certain ruin to a good pose. Hands, like children, often become unruly when they have nothing to do, and they will very likely become awkward when they are required to do something to which they are not accustomed. When it is in keeping with the nature of the picture you are making, try to have the hands doing something natural.

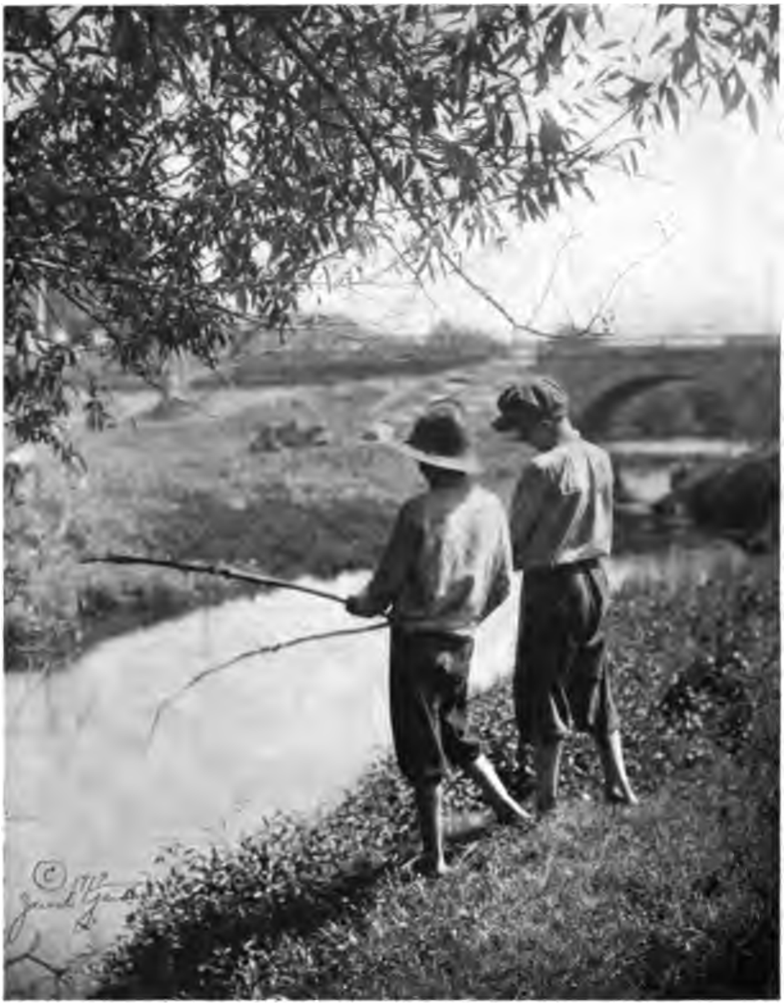
When a hand is unoccupied the sitter is so conscious of it that it becomes an encumbrance rather than a help. Giving the hand something useful and natural to do avoids this. The hands may be used with good effect as a support for the body.

Given an opportunity, the average man will rest his hand on or grasp something if he is standing, not because he thinks he is going to fall over or imagines he is in a street car, but because it is natural for the hands to be occupied. — *Photo Digest*.

THE SPEED OF LENSES

f:4.5 is 1.137 times faster than *f*:4.8
f:4.5 is 1.234 times faster than *f*:5.0
f:4.5 is 1.548 times faster than *f*:5.6
f:4.5 is 1.960 times faster than *f*:6.3
f:4.7 is 2.777 times faster than *f*:7.5
f:4.7 is 1.085 times faster than *f*:5.0
f:4.8 is 1.361 times faster than *f*:5.6
f:4.8 is 1.723 times faster than *f*:6.3
f:4.8 is 2.441 times faster than *f*:7.5
f:5.0 is 1.587 times faster than *f*:6.3
f:5.0 is 2.250 times faster than *f*:7.5
f:6.3 is 1.417 times faster then *f*:7.5
f:6.3 is 1.613 times faster than *f*:8.0
f:7.5 is 2.230 times faster than *f*:11.12

By carefully working this out, you will be able to find the speed of the lens which you are using, and how the speed of one compares with another. Better keep this; it will be worth something to you some time. — *Ansco Co.*



THIS IS ABOUT THE ONLY TIME THEY EVER STAND STILL
JARED GARDNER

THIS IS ABOUT THE ONLY TIME THEY EVER STAND STILL

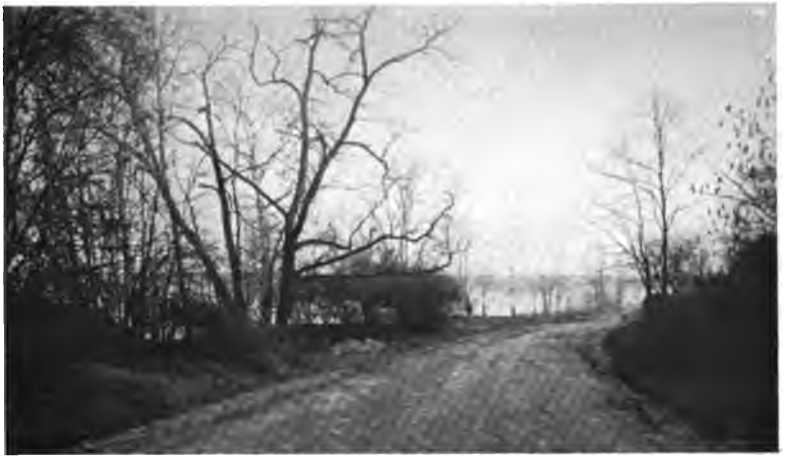
The most interesting feature of this clever little picture is the skill shown in the selection of the lighting and the distinct separation of the planes by selective focusing. The sun is high, the time being 11 A. M. in August, and is slightly ahead of the figures, so that the light and shade are strongly marked. This tends to make the figures stand out in almost stereoscopic relief. The focusing has been carefully considered and the background, while it is by no means fuzzy, is sufficiently less sharp than the foreground to create a satisfying illusion of distance. The figures are very well placed in the picture space and the overhanging branches help very much in covering up so much of the sky that might otherwise look too blank and empty. The apparent naturalness of the figures is much to be commended. On the whole this is a most successful genre picture. Made with a Seneca view camera, 8 x 10 Platyscope lens of 12 inches' focal length, quick cap exposure, stop *f*:22, negative developed in pyro with plenty of bromide, printed on Artura C.

OVERWORKING THE DEVELOPER

Professionals need reminding, in these days of economy, that they cannot keep down expenses by overworking their developers in bromide printing.

When a developer becomes too weak to do its work properly it should be discarded; otherwise washy, flat prints of unsatisfactory color are certain to be produced.

A certain quantity of developer will only develop satisfactorily a certain number of prints. Professionals who work on a large scale are apt to forget this. They use a fairly large quantity of solution, and work it as long as it will develop at all. The result is that a large number of their prints do not show the



LAKE DRIVE FRANK H. FIENE

beautiful greys and black which their paper is capable of giving.

It is very tempting when things are going along smoothly to let them run as long as possible; but this feeling must not be allowed to carry you too far. — *Professional Photographer.*

LAKE DRIVE

It would seem as though 1½ seconds was ample exposure for such a subject as shown in "Lake Drive," and yet the shadows seem to be a good deal too dark. Perhaps a lighter print would show more detail. The point of view has been well chosen and the "lines" of the road and of the tree just to the left of the center are very agreeable. Even though there are no definite clouds, the sky has good tone and luminosity. This, no doubt, is partly due to the use of the three-times ray filter. There is also good separation of the planes. Made in Wisconsin with a Conley XV camera, 3¼ x 5½, Rapid Orthographic lens of 6¼ inches' focal length, stop *f*:22, three-times ray filter, 4 P. M. in April, bright light, exposure 1½ seconds, Cramer Instantaneous Iso plate, developed with M. Q., print on Cyko Soft Studio.

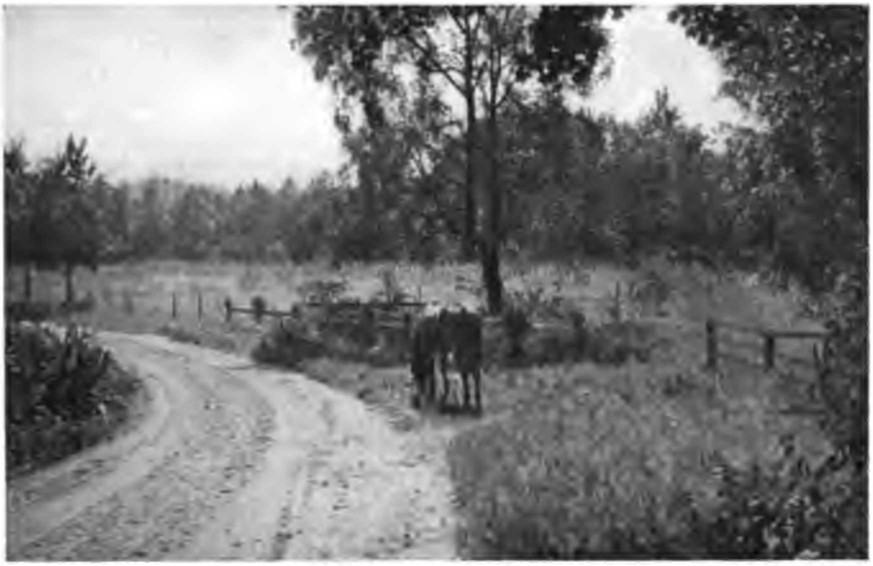
SELDOM SATISFIED

Why are so many people never satisfied with their photographs? Nervousness may very often be the cause of a photograph not being really up to the mark. The subject feels the same sensation at the studio as when visiting the dentist, and often assumes the same expression, a sort of stereotyped "how-to-look-happy-though-being-photographed" expression. "Now please look natural," says the operator, and the sitter assumes immediately a most hideous grimace, and then complains grievously when it is reproduced. One proud of the hands insists on placing them very much in evidence, and then indignantly demands, "What do you mean, look at the size you have made my hands."

Posing is a difficult art, and the photographer must not only be an expert at it, but, more difficult still, must be able to persuade his fair — and also unfair — clients that he is so. "No," I don't want to stand, I want to sit like this," he is told, the objector collapsing into a chair in an untidy heap, and then raging because the result suggests curvature of the spine. On the contrary a male client may insist on assuming an attitude like Ajax defying his mother-in-law, and then object to having his bow legs handed down to posterity. Trust the photographer, even if he does not always seem ready to trust you for any length of time. Reasons such as these may combine to cause much frequent dissatisfaction, but the main cause is probably self-consciousness. We all think ourselves "it" although we may think we don't. We know we cannot all be like Adonis or Venus, but we have all experienced the feeling of disappointment sometime or other when the proofs have arrived and we see ourselves as the camera sees us. Fortunately we can always blame the photographer. Take a snap shot of your maiden aunt when she isn't looking, and it very often is the best she has ever had taken, by yourself, at any rate, although she may be kind enough not to add that. Why should it be the best? Because she did not know you were taking her, and hadn't time to "pose" or think about her appearance. Animals, especially pets, usually make good subjects. This is no doubt because of their superiority to the human race, they are devoid of self-consciousness. At any rate they take it for granted that any thing you do must be all right, which is a much more consoling attitude. Take your pet cat's photograph, and he will love you just as much as ever. Take your best friend's photograph and you may lose him — or her.—THEODORE ELWARD.

A HINT ON BROMIDE PRINTING

In spite of all the photographic knowledge acquired in recent years, very little is really known about the latent image. Investigators have never been able to come to any decision regarding it. They expose a plate or a print, and they know that they have created this latent image and that it can be developed, but that is about as far as their actual knowledge goes.



BY THE WAYSIDE F. A. DOOLITTLE

Still, there are certain peculiarities concerning it which the regular photographer very soon finds out by experience. He soon gets to know, for instance, that, in printing on bromide or gaslight paper, this latent image is liable to deteriorate if the paper is laid aside for some time before being developed.

When prints are exposed one day, and not developed until the next, they are apt to appear very much underexposed. This does not always happen, but it happens so often that the professional cannot afford to run the risk of spoiling a batch of otherwise perfectly good prints.

Deterioration of the latent image is most noticeable when exposed prints have been left in a damp place. Even an hour or so in a moist atmosphere is often long enough to make a decided difference in the quality of the developed print. Prints left during lunch time have been known to show unmistakable signs of deterioration. Printers who are not aware that the latent image is liable to behave in this way often conclude that the paper of a certain emulsion is not uniform in speed. They blame the manufacturer for something in his paper which is common to all papers, and for which there is no known remedy. Strangely enough, this trouble is not met with in plates and films unless they are left for a very long time before being developed. It is met with in paper so often, however, that, until the erratic nature of the latent image is better understood, professionals would be well advised to develop prints as soon as possible after exposure, and to keep a dry atmosphere in their printing rooms. — *Professional Photographer.*

NICKEL-PLATED FITTINGS

Nickel-plated fittings can easily be cleaned with alcohol to which 2 per cent. of sulphuric acid has been added. Apply this mixture liberally and, after a few seconds, wash off with clean water. Then rub over with a swab dipped in fresh alcohol, containing no acid, and polish with a dry cloth. This method will give brilliance to the dullest piece of nickel-plate without damaging it in any way. — *The Professional Photographer.*

BY THE WAYSIDE

It is interesting to notice that almost invariably the tendency of the inexperienced picture maker is to place the important objects in his picture as nearly in the exact center as possible. A very little study and experience, however, is all that is needed to show that this is a mistake and that the exact center is not the best place for this important object. The reason is that the principality of one object can be aided by contrast with another object of less importance. This is usually described as pictorial balance, and the mental exercise of deciding which of two objects is the more important introduces pleasurable sensations which are described as pictorial interest. The mechanical balance of the steelyard often is employed to suggest pictorial balance in the following manner. The fulcrum is supposed to be in the center of the picture space and a large and important object at a little distance from the center can be balanced by a smaller and less important object at a greater distance. Therefore the positions occupied by the main object of interest and the secondary object must be very carefully considered if the pictorial balance is to be satisfactory. In "By the Wayside," the grazing horse is almost exactly in the center of the picture, and there is consequently a lack of balance. The road, leading the eye out of the picture on the left, is not a good line, because in a well-composed picture the lines of the composition should tend to lead the eye towards the principal object rather than away from it. There is interesting material here but it has not been used to the best advantage. Made in Painesville, Ohio,

THE DANCER JULIEN J. PROSKAUER

with a 4 A Kodak camera, 4¼ x 6½, fitted with an R. R. lens of 8¼ inches' focal length, stop f:16, bright light at 3 P. M. in September, exposure 1-25 second, Eastman film, developed with pyro powders, print on Professional Linen Cyko.

THE DANCER

It is quite a difficult proposition to get a "lost edge" when the subject is dresssed in white and posed against a black background and yet that is what Mr. Proskauer has done in "The Dancer." He has accomplished this by means of subdued lighting arranged to give plenty of shadow and by the use of a soft focus lens. The harshness often seen when a subject of these extreme contrasts is photographed by flashlight, as in this instance, is entirely absent and there is a delicacy and mystery in the picture that is most alluring. The pose is graceful. We wish the other hand could be seen more clearly instead of being hidden in the shadows of the drapery, but this is a comparatively unimportant detail. Made with an Eastman View camera, 5 x 7, fitted with a Verito lens of 9 inches' focal length, used at f:4, Seed 30 Gilt Edge plate, subdued flashlight exposure, metol-pyro developer, enlargement on Haloid Fine Fabric Linen.

THE HOLLYHOCK GIRL

One reason why we are glad to reproduce this picture is because it is an excellent example of the way in which sunlight can be suggested without heavy shadows or excessive contrasts. The range of tones is well within the scale of the printing medium; the highlights have tone and plenty of gradation while, at the same time, the shadows are luminous and are not in the least degree blocked up. The picture suggests sunlight very strongly and this is very largely due to the fact that the shadows have definite, clean-cut edges. The full exposure that was given has registered shadow detail and the careful development has prevented the highlights from becoming too dense in the negative; they are thin enough to show some gradation without having to have so long an exposure in printing that the shadows become too dark. The range of tones in nature can be compressed so that it comes within the limits of the printing paper by giving ample exposure and by stopping development before the highlights become too dense. This is an exceedingly attractive portrait and a picture we like to publish because of the helpful lesson that it teaches. Auto Graflex camera, 3¼ x 4¼. Cooke lens used at f:4.9, good light at 10 A. M. in August, exposure 1-10th of a second, Premo film pack developed with Nepera solution, enlarged on Artura Iris, E Smooth.

COLOR PRODUCTION

By J. W. Thomson

Photography and the printing press, since the introduction of the half-tone process, have become so inseparably connected that the majority of enthusiastic photographers will find a study of the various reproductive methods of considerable interest. In introducing the subject of color reproduction, so that what follows may be clearly understood, I propose to give a brief description of black and white reproduction. The chief difficulty encountered by all early experimenters in "process" work was the problem of rendering half-tones. An ordinary photograph has for its highest lights *white* or nearly white paper, its deepest shadows may be *black*, but all the intermediate tones will be different shades of grey. Now, while white paper and black pigment, or printing ink, may stand for the highest light and deepest shadow, they cannot be mingled so as to form a grey or half-tone without the use of a specially prepared block from which to print. The impression from solid type results either in the black of the ink or the white of the uninked paper. When dealing with two tones only (black and white), reproduction processes are much simplified; such subjects are called line subjects, or line blocks, and contain no half-tones or greys. The beautiful half-tones of a photogravure result from a thin coating of ink being broken up by the grain of the etched surface, and until a method of obtaining this grain was discovered half-tone printing either from relief or intaglio plates was impracticable, the method of applying a bitumen dust to the plate before putting down the carbon resist finally solving the problem in so far as photogravure was concerned. When we come to relief printing, that is, inking the top surface of the plate instead of the hollows, the problem is not so easy, though relief printing is much cheaper for magazine or book work than photogravure, because it is possible to print type and blocks together at one impression. Relief printing in half-tone is achieved by splitting up the shadows and highlights of the picture into a series of tiny dots technically called "stipple." In the solid or shadow portions the dots are very close together, and indeed joined up at the edges, thus forming an almost solid mass, which prints nearly black; in the half-tones the dots are more widely separated, and according to the distance of this separation and the size of the dots we obtain the varying quality of tone values in the subject. In the highlights the dots are very small and widely separated, and on the highest light of all they are etched away altogether, leaving pure white paper in the impression. Thus in the printed picture we obtain a full range of tone from black to white.

The basis upon which the half-tone process rests is that if the dots are fine enough, when viewed from a normal distance, the eye no longer realizes them as separate dots, but they appear as an even tint in all the varying tones which compose the subject. If any ordinary illustration in a book or magazine is examined through a magnifying glass it will be seen that it is composed simply by dots close together and joined up in the shadows, becoming more widely separated in the half-tones, and very small or altogether etched away in the highest lights. A half-tone block can be made from a photographic print or transparency, which must in either case be a positive. The first stage is to make a half-tone negative; such a negative contains all the tones of the subject made up of black dots of different sizes on a ground of clear glass. The production of this negative is the crux of the whole process. The original is photographed on a wet collodion plate, a half-tone screen being interposed between the lens and the plate in the camera. The half-tone screen consists of a glass plate with black lines crossing each other at right angles so as to form a very fine mesh, and its function is to split up the rays of light forming the image before they reach the plate, and so form the stipple. The distance between the lines on the screen determines the degree of coarseness or fineness of the block. For the rougher kinds of work, such as a newspaper, the screen is about 60 lines to the inch, while for fine work on art paper a much finer screen is used, probably 150 or 200 to the inch. In making the negative, a reversing prism is used in conjunction with the lens, as a reversed negative is required.

A copper plate is then coated with a preparation of fish glue and potassium bichromate. When dry this plate is placed under the negative and printed exactly as a carbon print. After printing, the plate is wetted and immersed in aniline dye, which stains the film and so assists one in watching the development, which is carried out with cold water, resulting in a metal plate made up of dots and spaces of bare metal with an insoluble gelatinous coating. This coating forms the resist to the etching fluid, and is burnt in before etching. The etching is done with nitric acid or iron perchloride, and in addition to acid etching fine etching is performed by hand, thus improving and controlling the result. We have now a plate from which we can print a great many impressions, but only in monochrome.

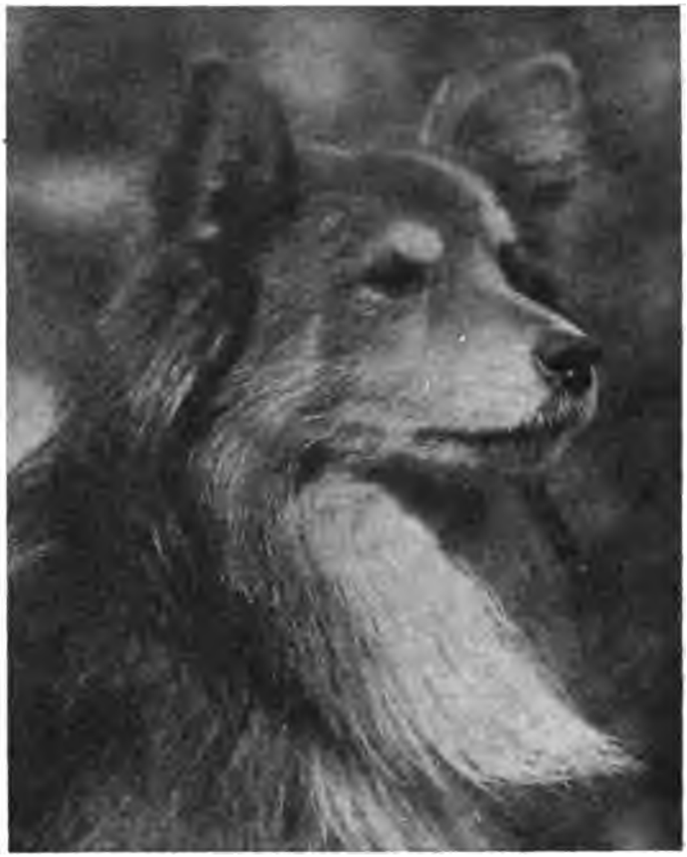
The process by which color reproductions are obtained is much more elaborate both in the making of the blocks and in the printing.

THE HOLLYHOCK GIRL LOUIS A. DYAR

The original source of all color is the pure white light of the sun. When a beam of sunlight is projected through a triangular piece of clear glass, called a prism, it is well known that the beam is split up or disintegrated into a band of colors comprising red, orange, yellow, green, blue, and violet — the colors of the solar spectrum. The dark portion of the blue merging into the violet was named indigo by Sir Isaac Newton, thus making seven colors, the familiar colors of the rainbow. By the further decomposition of the colored rays innumerable tints and hues may be obtained. Yet the white or solar light is itself composed of rays of three distinct colors — red, green, and violet — the primary colors of the scientist. By the combination in various proportions of these three primary colors all other colors are produced, but they cannot themselves be produced by the combination of other colored rays. In the foregoing I refer to prismatic colors, i. e., colored rays, but when dealing with pigments the theory of color differs in that the primary or foundation colors from which all other colors are produced, while being themselves unproducible by any admixture, are yellow, red, and blue, and while the prismatic combination of the scientist — red, green, and violet — produces white, the combination of the pigmentary primaries in their full strength produces black. Within the eye is a delicate membrane — the retina — upon which is projected by the crystalline lens the image of any object appearing before it. In scientific theory the retina is composed of three sets of fine nerve-fibres intermingled, the one set being sensitive to red, another to green, and the other to violet; these nerve-fibres unite in the optic nerve connecting the eye with the brain. Thus the brain receives that sensation which we call color, which has no material existence, but is produced by the excitation of the three nerve sets of the retina by the three fundamental elements of solar light in varying proportions. Color as seen in a colored object is the result of the absorption and reflection of the the rays of light which strike upon the body; the rays which are reflected are those which affect the vision and produce the sense of color. Should the object *absorb all* the rays it appears black, should it *reflect all* the rays it appears white; between these two extremes lie an infinite variety of tones. In color reproduction, by the medium of pigments, we deal first with the primaries — yellow, red, and blue. In defining a color three qualities have to be determined. These qualities are called color constants, and are: — (1) hue, (2) luminosity, and (3) purity. The hue is the color itself — red, crimson, blue, etc. Luminosity is the brightness of a color as it appears to the eye compared with a white surface, both being illuminated simultaneously by white light. Purity is the freedom of a color from admixture with white light. A full color is a color in its purest state — one which has not been changed by the addition of white or black. The primaries, secondaries, and their various hues are all *full* colors. Certain colors are called complementary colors. A color is complementary to another when by a mixture of the two prismatically white light is produced. There is a difference of opinion between the best authorities as to what colors are exactly complementary. For the purpose of illustrating color reproduction by the trichromatic process, the following colors are the complementaries: — Yellow, and violet blue; purple-red or crimson, and green; green blue or cyanine blue, and red.

The principle of photochromic three color work is based upon the Young-Helmholtz theory of trichromatic vision. Dr. Thomas Young in 1802 originated the theory of the three fundamental color sensations, but this was discredited and forgotten until 1853, when Professor Helmholtz brought it forward, and by experiments showed its probabilities. J. Clerk Maxwell by means of an invention of his own, called Maxwell's color box, demonstrated conclusively that there are only three primary color sensations. Attempts to produce colored prints by the superimposition of the three primary colors (pigmentary) were made in the seventeenth century by German copper-plate printers. In the eighteenth century the method was greatly improved by the addition of a black key-block (that was before the introduction of photography). Mr. F. E. Ives of Philadelphia in 1881 was the first to produce a photochrome picture from three letterpress blocks, using screens similar to those in use at present. The blocks are produced by the use, in the camera, of color screens or filters, scientifically tested, which absorb and refuse passage to certain colored rays, while permitting the passage of others. A photographic filter of a violet-blue color will only pass violet rays, therefore only those rays will be recorded in the negative, the green and red rays being stopped out. A green filter will only pass and record the green rays, red and violet being stopped out. A red filter will only pass and record red rays, the green and violet-blue being stopped out. The first negative is made through a violet-blue filter, and is therefore a record of the primary violet sensation, and the block which is made from that negative must be printed in a color which represents the prismatic combinations of the two colors stopped out when making the negative, i. e., green and red. The prismatic combination of green and red is yellow; the first block then is printed in the pigmentary primary yellow, which is also the complementary color of the violet filter used in making the negative. The second negative is made through a filter of a green hue, which, passing green rays, is a record of the primary green sensation; the two colors stopped out are red and violet, the prismatic combination of which is crimson, the primary red of the artist. The block from that negative is therefore printed in crimson-red, the complementary of green. For the third negative a red filter is used, passing all the red rays in the original object whether pure red or in combination with orange purple, or other colors. The rays stopped out are violet and green, which, prismatically combined, produce cyanine blue. The block is printed in a blue of this hue. The whole principle controlling the process is the analysis or separation followed by the recombination of the colors in the original object.

The success of photochromic work depends on the blocks, on the ink, and on the printer. The color filters must be constructed on scientific principles combined with a thorough knowledge of spectroscopy and photography. The process engraver must know his business, which calls for the highest technical skill. The printer who hopes to achieve success in trichromatic work must possess a knowledge of the process, or work under close supervision of one who possesses such knowledge. The crucial test is not only a correct rendering of the colors of the original, but the production of neutral blacks and greys wherever they occur in the original. The inks must be complementary to the filters, and the colors of the inks must bear correct scientific relation to each other if absolute success is to be attained by three colors only. The tintorial mixture in a photochrome print is two fold — optical and pigmentary. The shadows, half-tones, and highlights in the picture being produced by various sizes of dots, the colors are produced by the superimposition of yellow, red, and blue dots. Where the dots cover each other they produce a pigmentary mixture, almost identically as if the pigments had been mixed by a palette knife previous to printing. Where the dots lie next to each other they produce an optical mixture, as the eye will record two adjoining dots simultaneously; red and blue dots close together will appear as violet; blue and yellow dots as green; red, yellow, and blue dots equally intermingled appear as black or grey, if the dots are small and allow the paper to reflect white light through between the interstices. When the blocks are placed on the printing machine and a given number of copies has to be printed off, the blocks must be made ready. "Making ready" consists in obtaining the best impression it is possible to obtain from the blocks, and it is here that the printer's art manifests itself. A first-class color printer will achieve a result immeasurably superior to that obtained by an indifferent printer. The printing is also a branch of the work demanding high technical skill, otherwise the achievements of the scientist, the color photographer, and the process engraver are nullified. The plates must be unmounted and underlaid or interlaid, and then over-



TOM R. H. JAFFRAY

lays have to be prepared and fixed to the machine cylinder or platen in order to emphasize the shadows and keep the highlights clear. A color sheet must be kept during the run of each color in order to keep the color constant, for if the color is carried too spare, or an excess of color is carried in any of the workings, the final result will only be a travesty of the original. —*Transactions of the Edinburgh Photographic Society.*

CLEANING LENSES

When you clean a lens, always avoid using silk, which has a disagreeable way of electrifying the glass and causing it to attract dust particles. Always dust a lens before wiping it with cloth or paper; if it is very dusty, blow off the dust with your breath. It is quite possible to overdo the cleaning and even to damage the lens by too much rubbing and polishing. One of the signs of a good lens is that the surface of the glass looks black when held against a dark object. If it looks grey instead of black, it is a sign that the fine polish has been destroyed by too much wiping and cleaning, and the surface is covered with a multitude of fine scratches. This naturally tends to a loss of brilliancy, and a surface that is very badly scratched would give an effect very much like that given by a dusty lens. The only remedy for this is to send the lens back to the manufacturers to be repolished. If you should find a spot on a lens which will not loosen up with moisture from your breath and careful wiping, it might be a corrosion mark which can only be removed by repolishing. Airbells or bubbles in the glass need cause no uneasiness, they are unavoidable in some kinds of optical glass, but they do not interefere with the definition or the good performance of the lens in any way.

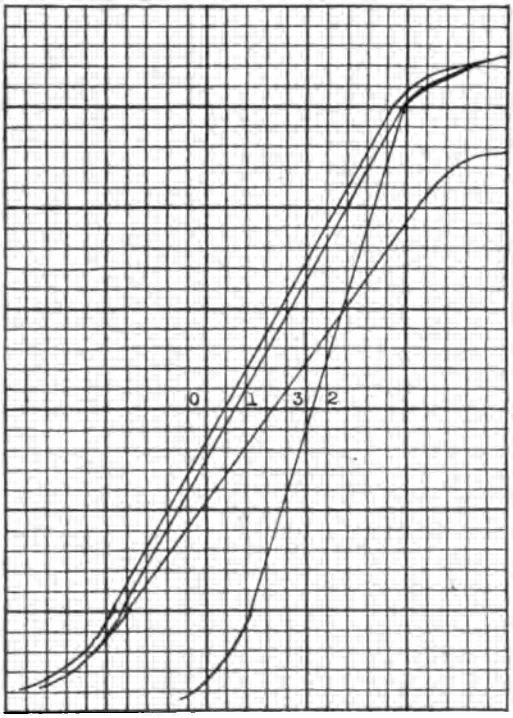
TOM

This is a very successful picture of a fine dog; the textures are wonderfully well suggested and there is an alertness in the pose that is very attractive. The head is well placed and in every respect the picture is one of which its maker may well be proud. Technically as well as artistically the print is a good one and is good enough, we think, to repay the time and trouble spent in careful retouching and spotting of negative and print to remove the few slight flaws and scratches. This is a subject that would look well if printed in a warmer tone, but the Royal Bromide paper with its slightly buff stock prevents the black and white from being too cold. Made at Lake Placid, N. Y., with a Graphic 5 x 7 camera, Ross-Zeiss lens of 8½ inches' focal length, used at *f*:16, exposure 1-5 second, bright sun, 3 P. M. in September, Hammer Red Label plate developed with pyro.

THE PHOTOGRAPHIC REVIEW

E. J. Wall, F. C. S., F. R. P. S.

The Reduction of Development Prints.—L. A. Jones and C. E. Fawkes, of the Kodak Research laboratory, have published a sensitometric study of the action of various reducers on development, or gaslight, prints, and classify them into three types, as shown in the accompanying diagram,



in which ● represents the original print densities **1** type 1, **2** type 2 and **3** type 3 reducer respectively It should be noted that, of course, the tops of these curves represent the shadows and the lower parts the highlights of the prints. The formulas used were:

Permanganate reducer:

Potassium permanganate	1 g	7 gr.
Sulphuric acid, 10% sol.	50 ccm	350 minims
Water	1000 ccm	16 oz.

For use add 1 part to 13 parts water.

Belitski's reducer:

Ferric chloride, cryst.	32.5 g	227.5 grs.
Potassium (or sodium) oxalate	625.5 g	1 oz.
Sodium sulphite	40 g	280 gr.
Water	1000 ccm	16 oz.

When ready for use, add to the above 15 g (85 gr.) of oxalic acid crystals and shake till the solution turns green. Pour off from any undissolved acid and add to the clear solution 250 g (4 oz.) hypo. Dilute 3 parts of this solution with 11 parts water.

Iodine cyanide reducer:

Iodine (10% sol. in pot. iod. sol)	57.5 ccm	403 mins.
Potassium cyanide, 10% sol.	10 ccm	70 mins.
Water	1000 ccm	16 oz.

Dilute 1 part with 10 parts water for use.

Farmer's reducer:

Hypo, 20% sol.	750 ccm	12 oz.
Potassium ferricyanide, 10% sol.	250 ccm	4 oz.

Dilute 1 part with 3 parts water.

Nietz's proportional reducer:

A

Potassium permanganate	0.125 g	0.44 gr.
Sulphuric acid, 10% sol.	7.5 ccm	26 minims
Water	500 ccm	8 oz.

B

Ammonium persulphate	12.5 g	44 gr.
Water	500 ccm	8 oz.

For use take 1 part A, 1 part B, and 4 parts water. Both solutions should be made with distilled water and kept in the dark.

Ammonium persulphate reducer:

Ammonium persulphate	80 g	560 gr.
Sulphuric acid	1.06 ccm	8 minims
Sodium chloride (salt)	0.8 ccm	6 gr.
Water	1000 ccm	16 oz.

For use dilute 1 part with 2 parts water.

The permanganate reducer acts like type 1, is rapid, and no stain is caused; from 45 to 120 seconds is the average time and it reduces any slight fog. Belitski's reducer acts differently on different papers; on Artura it acts like type 2 and gives brownish images if reduction is carried far; but on Azo and Velox it acts like type 1 but reduces the shadow densities more than the highlights. Iodine-cyanide is of type 2. Farmer's solutions acts like 2. Nietz's also acts differently on the different papers, on Velox it acts like 1, on Artura more like 2, on Azo like 3. Ammonium persulphate acts like 3. The solutions given also act on printing-out papers (*Brit. J. Phot.*, 1921, **68**, 275).

A New German Screen-plate and Film.—The Filma-A-G., of Munich, is shortly to place on the market not only a new screen-plate, but also a cinematographic film, which is stated to be about 10 per cent more transparent than the autochrome plate. This is stated to be based on the patents of R. Ruth, and the color elements are prepared from stained resins or similar solutions (*Phot. Ind.*, 1921, 953). According to Ruth's patents (*Eng. Pat.*, 16,273, 1910; *D. R. P.*, 233,167, 1909; *Brit. J. Phot.*, 1910, **57**, 824), colored solutions of gelatine, resins or colloids are to be atomized and the particles received on a tacky support; the height of the atomizing chamber being so adjusted that the particles would be dry when they settled. In a later patent (*Eng. Pat.*, 19,554, 1910; *Brit. J. Phot.*, 1911, **58**, 386), he proposed to add the colors to a panchromatic emulsion and atomize the mixture in the same way. Exactly how to make a screen-film fast enough for cinema work is not stated, nor how to print from the same when and if obtained. Nor is there any indication as to how to overcome the visibility of the individual elements in projection, for, assuming that the normal degree of enlargement of the cinema picture is 240 times, that is that a 20-foot screen is used, it is obvious that the actual color elements must be very minute if they are not to be distressingly visible. Then again, as the distribution of the colored grains in this method of manufacture is dependent entirely on the law of probabilities, one must have clumping of grains of any one color as in the autochrome plate, so that however much one may argue on the basis of the actual size of the color units, the whole argument falls to the ground because the clumping of the colors must be considered. As regards the printing or reproduction of such a film, one must adopt either the reversal process, in which case the original negative is non-existent, or one must obtain a negative in complementary colors and print from that, and it is well-known that it is impossible to obtain a truthful rendering by this process. Regular geometrical color elements would seem to offer the best solution of the problem, and numerous patents have been taken out for the same; but one has here the same difficulties of printing, and the further trouble that if the individual color elements occur in regular order considerable graininess would make its appearance in projection. A screen-plate film would seem to offer the true solution of cinematography in three colors, but one might fill pages with the theoretical and practical difficulties that would be encountered.

LIVER OF SULPHUR. — Bullock has also given the following method of preparing this preparation, also known as potassa sulphurata, potassium polysulphide and hepar sulphuris:

Caustic potash	100 g	700 gr.
Water	1000 ccm.	16 oz.

Dissolve and saturate half the solution with hydrogen sulphide and then mix with the other half. To the mixture add:

Sulphur, pure	120 g	840 gr.

Boil for 5 minutes, constantly stirring, allow to cool and filter and keep in the dark in a rubber-stoppered bottle. For use as a single toner dilute with 20 times its volume of water. A slight precipitate of sulphur may ensue, but this may be filtered out, or dissolved by the addition of a little sodium sulphide and warming; but it is practically negligible. A good working bath is:

Stock solution, as above	50 ccm	¾ oz.
Water	950 ccm	15¼ oz.
Sodium sulphide, 20% solution	2.5 ccm	18 mims.

This will remain clear for about an hour and the odor is not nearly as objectionable as the usual sulphide bath. The addition of 2 per cent of a sulphocyanide doubles the speed of action and gives more purplish tones; but the addition of 1 per cent thiocarbamide hastens toning, without effecting the color (*Brit. J. Phot.*, 1921, **68**, 447).

QUINONE BLEACHER. — MM. Lumière and Seyewetz recommend ordinary quinone (benzonionen $C_6H_4O_2$) with a halide and sulphuric acid as a bleach, which obviously may be used instead of the usual halogenising mixtures:

Quinone	5 g	35 gr.
Sodium chloride	6 g	42 gr.
(Or potassium bromide)	11 g	77 gr.
Sulphuric acid	3 ccm	21 minims
Water	1000 ccm	16 oz.

This acts without staining of the gelatine and very rapidly (*Brit. J. Phot.*, 1921, **68**, *6*). H. Goulding (*Brit. J. Phot.*, 1915, **62**, *726*) has already pointed out the use of quinone-halide baths for this purpose, and the non-staining character; the only disadvantage seems to be the high price of the quinone, which was more than twice that of silver nitrate; possibly since the war this may have dropped. It also possesses a peculiar characteristic smell that is extremely irritating.

TONING WITH TIN SALTS. — F. Formstecher points out that Neugschwender (*Koll. Zeits.*, 1910, **7**, 215) first suggested the use of tin salts for toning silver images, and was followed by J. Desalme (*Bull. Soc. Franc. Phot.*, 1912; *Brit J. Phot.*, 1912, **59**, 215) and Namias (*Phot. Korr.*, 1913, 303) and that this has recently been revived by Pokorny (*Der Phot.*, 1920, 89) in a very unsuitable form. Apparently the basis of the toning process is a definite adsorption of colloidal silver, and as has been proved by L. Wohler (*Koll. Zeits.*, 1910, 249) that purple colloidal silver is an adsorption compound of silver with varying proportions of metastannic acid, $SnO_2.H_2O$. The tones obtained range from brown to red and are very permanent. The prints must first be bleached either with the ammonia-ferricyanide bath or the following:

Cupric chloride	30 g	210 gr.
Hydrochloric acid, sp. gr. 1.12	3 ccm	21 minims
Water	1000 ccm	16 oz.

This gives a warmer brown. After bleaching, the prints should be thoroughly washed. Toning can be effected with separate baths of tin chloride, followed by an alkali, or by the use of sodium or potassium stannite. The stannous chloride bath is:

Stannous chloride	100 g	700 gr.
Hydrochloric acid, sp. gr. 1.12	10 ccm	70 minims
Water	1000 ccm	16 oz.

The prints should be immersed in this for 1 or 2 minutes, well washed, and then immersed in one of the following solutions:

A. Potassium carbonate, 10 per cent solution
B. Sodium carbonate, crystals, 5 per cent solution
C. Ammonia, 5 per cent solution

Immersion should be for 3 to 5 minutes. C gives reddish-brown tones, B brownish-purple, and A intermediate tones. The use of the alkaline stannites is preferable, as giving finer grained images. The sodium salt is prepared as follows:

Tin chloride	10 g	7 gr.
Water	100 ccm	700 minims

Dissolve and add:

Caustic soda, 10% solution	70 ccm	490 minims.

Shake constantly until the precipitate first formed is redissolved. Then add:

Water	80 ccm	560 minims

The potassium salt is made in the same way, only substituting:

Caustic potash, 10% solution	100 ccm	700 minims
Water	50 ccm	350 minims

The sodium stannite gives purple black tones and the potassium salt brownish-black, with bromide papers. Development papers give warmer, sepia, tones with the sodium and reddish with the potassium salt. These baths keep fairly well and the tones are permanent. Printing-out papers are also amenable to this process of toning, but the results are not very satisfactory, except in the case of the copper-bleach process. A better result is obtained wtih the following bath:

"Tin salts"	100 g	700 gr.
Water	1000 ccm	16 oz.
Ammonia	7 ccm	49 minims.

Enough ammonia is used to leave the solution faintly acid, that is without smell of ammonia, after quarter of an hour. The "tin salts" are sodium-tin-chloride, $Na_2SnCl_3.H_2O$. For self-toning papers the above bath, used instead of the customary salt bath, gives reddish-brown tones with slight intensification. But the best result for this class of paper is obtained by printing deeply, then immersing in a 1 per cent solution of potassium iodide for 10 to 15 minutes, washing for a short time and immersing in:

Tin salts	10 g	70 gr.
Ammonia	7 ccm	49 minims
Potassium iodide	1 g	7 gr.
Water	1000 ccm	16 oz.

The iodide should be added 15 minutes after the other chemicals have been mixed, and the bath must be freshly made. The prints should be left in this for 15 minutes, washed for 30 minutes and then fixed in 10 per cent hypo. This gives bluish prints of a color not obtainable by any other process. More reddish tones may be obtained by adding to the preliminary iodide bath 1 per cent of ammonium sulphocyanide (*Brit. J. Phot.*, 1921, **68**, 759; from *Phot. Rund.*) Formstecher is obviously ignorant of Woolley and Gamble's exhaustive paper (*Brit. J. Phot.*, 1913, **60**, 987) on the use of tin salts, which covers the same ground with much greater detail.

Dry Mounting Tissue. — V. Jobling gives the following formula for making this tissue:

I.	Orange Shellac	400 g	4 oz.
	Methylated spirit	600 ccm	6 oz.
II.	Gum elemi	100 g	1 oz.
	Canada balsam	100 g	1 oz.
	Methylated spirit	800 ccm	9 oz.

Dissolve separately and mix. The Canada balsam is the ordinary thick syrupy solution. Japanese tissue, which is used for copying letters, is immersed in the above mixture, the sheets dragged over the edge of the dish to remove excess liquid, and dried (*Brit. J. Phot.*, 1921, **68**, 257). Methylated spirit is ordinary ethyl alcohol denatured with 10 per cent of impure methyl alcohol and a little petroleum benzine; obviously ordinary denatured alcohol may be used.

Cold Varnishes. — The following formulas for cold varnishes are revived, having been first suggested by E. Vogel in 1890;

I.	Pyroxylin	12 g	84 gr.
	Amyl acetate	400 ccm	6¼ oz.
	Benzol	400 ccm	6½ oz.
	Acetone	200 ccm	3 oz.
II.	Celluloid	5 g	35 gr.
	Acetone	500 ccm	8 oz.
	Amyl acetate	400 ccm	8 oz.
III.	Pyroxylin	100 g	700 gr.
	Amyl acetate	1000 ccm	16 oz.

When dissolved, allow the solutions to stand for about 8 days to settle (*Phot. Ind.*, 1921, 989). The more amyl acetate used the slower the drying, and No. III will take more than 24 hours. The use of these varnishes was first suggested by Col. Water house in 1888.

Bromo-iodide Emulsions. — C. A. Schleussner & H. Beck have examined the action of the addition of iodide to silver bromide emulsions, and call those in which the silver was added to a mixture of the alkaline bromides and iodies, "primary." Those to which the iodide was added after formation of the bromide, are called "secondary" and those consisting of mixtures of separately prepared emulsions of bromide and iodide of silver, "tertiary." The addition of iodide to emulsions has certain advantages, notably in the lessening of fog, greater speed as a rule and greater latitude in exposure. The authors find that when the ammonia process is adopted, that is the silver sensitive salts are formed with ammonia added to the bromized gelatine, the highest speed is obtained by the addition of 3.5 per cent of iodide; whereas when the silver nitrate is converted into the ammonio-nitrate, 1 per cent iodide gives the highest speed, but this is not so great as in the previous method. It was also found that the highest speed to the X-rays was with a pure bromide emulsion. Bromo-iodide emulsions give a finer grain than pure bromide ones when prepared under the same conditions. The increase in speed with the iodide additions seems to be consequent on the greater sensitiveness to the green For orthochromatic plates, sensitized with erythrosin, an addition of 1 per cent of iodide is said to give the highest color sensitiveness. (*Zeits. wiss. Phot.*, 1921, **21**, 105; *Sci. Tech. Ind. Phot.*, 1921 **1**, 109). These results do not quite agree with those generally accepted by emulsion makers.

Vanadium or Green Toning. — I drew attention to the usual methods of obtaining green tones on prints and transparencies with vanadium, and the prevalent idea that vanadium gives the green color. Further that Namias, Fox and others had pointed out that actually the color due to this metallic ferrocyanide is a yellowish-orange, and that it is the desposition of the ordinary cyanotype or Prussian blue in conjunction with the yellow vanadium that gives green. The usual baths with vanadium chloride, which is an expensive salt, are apt to give muddy tones, due to the opacity of the silver chloride formed; but if the oxalate or sulphate be used, much more transparent colors are obtained. The oxalate is very easily prepared as follows: place 100 g (3 oz. 130 gr.) vanadium chloride in an evaporating dish and add 460 g (1 lb.) pure oxalic acid, then 500 ccm (17½ oz.) distilled water. Stir well and gradually heat, and the thick cream will become more fluid and turn first orange, then greyish-blue, and finally on the addition of more water and greater heat a brilliant blue clear solution is obtained, which should be made up to 1477 ccm (53 oz.) to make a 20 per cent solution of vanadium oxalate. The actual toning bath should be:

Vanadium oxalate solution	50 ccm	¾ oz.
Oxalic acid, sat. solution	50 ccm	¾ oz.
Ammonium alum, sat. solution	50 ccm	¾ oz.
Ferric oxalate, 20% solution		quant. suff.
Glycerine	50 ccm	¾ oz.
Potassium ferricyanide, 10% solution	10 ccm	70 mins.
Water	1000 ccm	16 oz.

Add the oxalic acid solution to the vanadium and half the water, then add the alum and ferric oxalate. Mix the glycerine and the ferricyanide with the remainder of the water and mix the two solutions. The color is dependent on the quantity of the ferric oxalate used, and with 10 ccm (70 minims), to the above bath, almost a pure emerald green is given. The colors are very transparent and there is no need to fix the prints or slides, and this bath gives some very effective colors for the latter. (*Phot. J. Amer.*, 1921, **58**, 96).

Photography in 1787—Attention is called to a passage in "Rational Recreations in Natural Science," by W. Hooper, published in 1787, describing "How to Print Letters by Sunlight." The directions given are to fill a glass decanter with a solution of lunar caustic (fused nitrate of silver) mixed with chalk and aquafortis, of the consistency of cream. Then, having pasted paper models of the desired shape on the outside of the decanter, place it in the sun. The glass will turn black, leaving the space occupied by the paper designs white. This is more than fifteen years before the experiments of Wedgewood (1803) (*Phot. J. Amer.*, 1921, **58**, 508). This is nothing more than a rehash of J. H. Schulze's experiments in 1727, on which Eder (*Geschichte der Photograhpie*, 1905, **1**, I, 50) bases the claim of the discovery of photography by a German. The absurdity of claiming this as photography has already been fully dealt with by Waterhouse and others. Exactly how one could make a paste of silver nitrate, chalk and nitric acid, which is what aquafortis is, is not stated; unless of course the chalk was in enormous excess, and then the acid would no longer be acid but calcium nitrate.

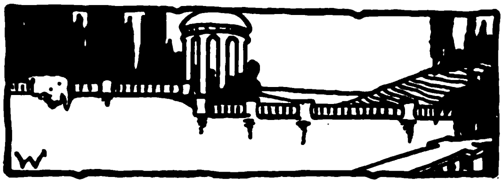
THE COPPER-MORDANT TONING PROCESS. — Dr. A. Traube, so well known as the inventor of the diachrome or iodide-mordant toning, has patented several variations of the copper-mordant process for obtaining dye images, which may be useful not only for color photography but also for ordinary lantern work. The images must be kept rather thin, as otherwise when used for projection the images are opaque and too heavy. Basic dyes should be used and preferably in 1:1000 strength with the addition of a little acetic acid. When used of this strength, dyeing takes about 5 minutes, and washing completes the process. Much greater transparency of the images is obtained by fixing with hypo, which dissolves out the silver ferrocyanide formed. The copper ferrocyanide has a rather dull reddish color, which in some cases rather saddens the dye color, particularly in the case of green and some blues; but if desired the copper salt may be entirely removed by a weak bath of caustic soda. Traube prefers half the normal quantity of copper and ferricyanide with the usual ratio of alkaline citrate, which prevents the precipitation of the copper ferrocyanide in the solution; and he states that greater transparency is obtained by using more ferricyanide than copper. The thio-benzyl, thiazine, pyronine, oxazine and acridine dyes can be used, for instance thio-benzyl yellow for the yellows, thiazines for the blue, pyronines, safranines, oxazines and acridines for the reds (*Eng. Pat.*, 147,005, 1916; 147,103, 1920; *Brit. J. Phot.*, 1921, **68**, *Col. Phot. Supp.*, **15**, 23, 328) In later patents modification of the results is suggested by treatment with acids or more dye solutions. Still greater transparency is obtained by using half the usual quantity of copper and ferricyanide (*Eng. Pat.* 163,336; 163,337, 1920: *Brit. J. Phot.*, 1921, **68**, *Col. Phot. Supp.*, **15**, 32). Copper ferrocyanide as a mordant for basic dyes was patented by J. I. Crabtree (*U. S. Pat.*, 1,305,962, 1919) and F. E. Ives (*U. S. Pat.*, 1,300,616, 1919); the former applying for his patent on Jan. 25, 1917 and the latter on Feb. 20 1917. Crabtree used ammonium citrate and carbonate and Ives potassium citrate. Actually Namias tried this compound in 1909 and 1911 for the same purpose, but apparently without much success. It seems to be immaterial which copper bath be used, but those containing ammonia in some form last much longer in practice and give rather cleaner whites, and in this case the citrates are unnecessary. A bath compounded on the lines of Traube's patents would have somewhat the following composition:

Cupric sulphate	3 g	21 gr.
Potassium ferricyanide	9 g	63 gr.
Water	1000 ccm	16 oz.

Dissolve the salts separately and mix, and add immediately enough ammonia or ammonium carbonate to form a clear solution; an alkaline citrate may be added but I have not found any advantage therein.

ABSORPTION OF HEAT IN PROJECTION. — W. Crookes has investigated the transmission of heat from an arc light in projection through various solution in 5 cm thickness, allowing the beam to fall upon a thermometer, with the following results, in degrees C.; water, 197; saturated solution ammonia alum, 170; ferrous sulphate, 7.75 per cent solution, 138; copper sulphate, 0.33 per cent solution, 118; 0.66 per cent, 104; 1.32 per cent, 93; 2.64 per cent, 87; 5.28 per cent, 80. The color of the 1.32 % solution is almost imperceptible on the screen (*Chem. News*, 1921, **123**, 81). For many years it has been an accepted axiom, handed on by writer after writer, that alum solution was the best heat absorbent for use for projection or with the projection microscope; but this has been many times exploded. C. E. K. Mees (*Phot. J.*, 1911, **51**, 368) found, using a radiomicrometer with a glass lens, which cuts out all radiant heat of longer wave-length than 25,000 A. U., the following results: assuming no absorbent to be used, the transmission was 100 per cent with 6 mm of water, 20 per cent with the same thickness of 30 per cent solution of ferrous sulphate acidulated with sulphuric acid, 13.3 per cent; with 20 mm of water, 8.3 per cent; with the same thickness of the iron solution 2 per cent. R. A. Houston and J. Logie (*Phys. Zeits.*, 1910, 672) found that water transmitted 11 per cent of the heat rays, while a 1.26 per cent solution of ferrous-ammonium sulphate (Mohr's salt) only passed 5.1 per cent. A. Miethe (*Jahrbuch*, 1912, 697) using a glass trough of colorless glass 3.2 mm in thickness, and 51 mm depth, when filled with 1 per cent solution of cupric sulphate with sulphuric acid passed only 6.2 per cent of the heat transmitted by pure water. Even in half strength, when the solution is practically colorless, only 18 per cent of the heat was transmitted. A. Schulze (*Phys. Zeits*, 1910, 1019) found that a wire netting or glass, ruled with black lines, also prevented the ill-effect of the heat rays, and it was stated that a celluloid film placed in the light cone without the screen fired in a few seconds; while with the screen it withstood the effects for three-quarters of an hour (!!) with 20 amperes. In this case one has practically the effect of a coarse diffraction grating, which sends the heat rays on another path than through the film. An experiment made by me some time ago showed that an ordinary cinema film placed in the point of the light cone from a 65 ampere arc fired in 2½ seconds, with a black silver image, but with an image in black aniline dyes, to match the color of the silver image, the celluloid fired in 3¼ minutes; obviously the metallic silver acts as a strong absorbent of heat.

NEUTRAL GREY WEDGES — F. C. Toy calls attention to the fact that, when using neutral wedges for testing plates, interference fringes may make their appearance both at the upper surface of the gelatine film and between the wedge and the plate to be tested. These are a great nuisance, especially when using monochromatic light. They can be prevented by separating the cover glass by pieces of thin paper, about 0.3 to 0.5 mm. thick, and by using paper 0.2 mm thick for the side that comes in contact with the plate (*Phot. J.*, 1922, **62**, 110). The neutral wedges, introduced by Goldberg (*Brit. J., Phot.*, 1910, **57**, 648), are very useful for experiments in testing plates and papers for speed, and are not difficult to make, but they can also be obtained from the Eastman Research laboratory, Kodak Park, Rochester, N. Y.



PRACTICAL HINTS

A SIMPLE METOHD OF COPYING PHOTOGRAPHS. — This is a subject that will be of interest to amateur photographers who have only a hand camera. The method is simple when once you have made the necessary apparatus and that can be made in about one hour. The camera I use is a 2C Kodak Jr. with R. R. lens. Besides the camera you will need one of the large lenses from a pair of opera glasses, some cardboard tubing, wood, cardboard, tacks, etc. First make the stand to hold the camera and the subject to be copied. This must be adapted for the particular camera with which it is to be used. Before the stand is finished the exact position of the camera must be ascertained by trial and error and to do this it is necessary to fix the opera glass lens in front of the camera lens. This can best be done by using a short piece of cardboard tubing of the right size. See Fig. 4. Then placing the camera on the stand at what you think is about the right distance from the easel, pin a piece of boldly printed matter upside down on the easel. Put a piece of ground glass in the back of the camera with the ground side touching the rollers over which the film passes, so that the image on the ground glass will be just the same as will be registered on the film. Use a large focusing cloth to keep out the light while you study the definition of the printed matter as reproduced on the temporary focusing screen. Move the camera back and forth till this is practically sharp. It will probably not be possible to get it sharp in the center as well as towards the corners, but subsequent stopping down will correct that. When the right position for the camera has been ascertained, the baseboard should be marked so that the supporting pieces can be so placed as to make it possible to put the camera on the stand in exactly the same position every time it is used. Thus your picture will always be in focus. The next thing to do is to mark the easel in some way so that you will know just where to put the picture or other matter to be copied with the certainty that it will all be included. When these things have once been determined, all subsequent operations with the camera and stand will be automatic. All that will be necessary is to place the picture to be copied on the easel in the position indicated, put the camera on the stand in its right place, stop down the lens as far as it will go and, with the shutter set for time or bulb, give an exposure of from ½ second to several seconds, depending on the light and the nature of the subject that is being copied. This can best be found by experiment. I have found that newspaper clippings take about 1-5 second, photographs ½ second, tintypes about 1 second, these times being for exposures made in direct sunlight. In the shade they would be a good deal longer. This is my method of copying and anyone following these simple instructions can do the same and get good results. — HENRY CARROLL.

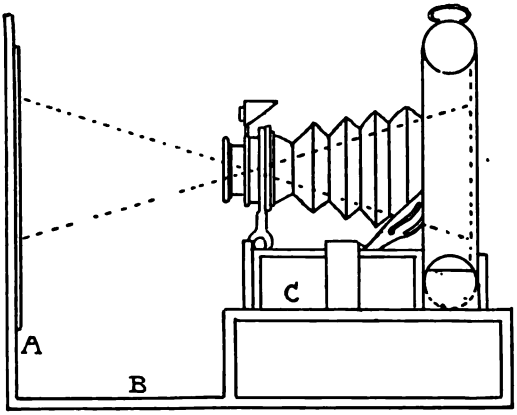


Fig. 1

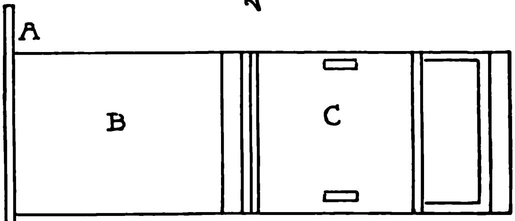


Fig. 2

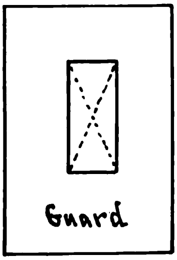


Fig. 3

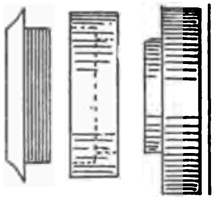
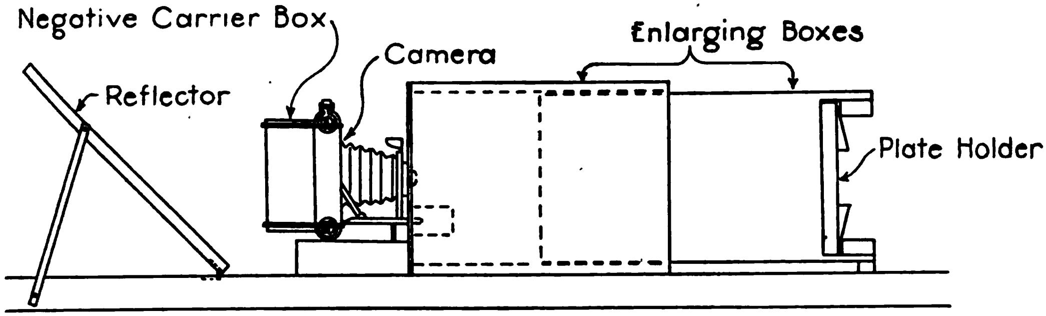


Fig 4

DAYLIGHT BOX-ENLARGING. — Everyone who uses a camera is sure to possess many fine negatives and if these pictures are of small dimensions their value may be greatly increased by enlarging. Your own daylight enlarging apparatus may be easily made which will produce excellent results. The same camera (if it has a bellows extension front) with which the picture was taken is used together with a simple box arrangement, a large dry plateholder and a paper reflector. A dark closet is necessary for developing.

An outfit giving enlargements eight inches by ten inches in size from four by five or smaller negatives, is very convenient and workable. An ordinary eight by ten plateholder, which costs about two dollars is used for this. The enlarging boxes are made of half-inch pine boards. The larger box is twelve inches high, twelve and three-quarter inches wide and sixteen inches long, one end of which is closed by a piece of quarter-inch stiff cardboard. In the center of the cardboard is a circular opening to admit the camera lens. Below the opening is a built-in box arrangement to receive the bottom of the camera. The



smaller box, or draw-box, is ten and seven-eighths inches high, eleven and five-eighths inches wide and seventeen and one-half inches long. The top and bottom project behind two and seven-eighths inches, to which cleats two inches wide and seven-eighths inches thick are fastened forming a groove into which the plateholder slides. The opening to the box is cushioned by heavy cloth, against which the holder rests, wooden wedges are inserted between the cleats and the plate holder, firmly pressing it against the cushioned box-edge and excluding all light. The boxes are put together with screws, all joints being made light tight by inserting strips of heavy cloth. The inside is painted a dull black. Light is excluded where the draw-box enters the large box by wrapping a dark cloth around the joint.

By means of these two boxes, one sliding within the other, you are able to regulate the degree of enlargement. With every change in the relative positions of the boxes the camera rack and bellows must be extended or compressed, whichever the case requires. To tell when the focus is correct hold a sheet of ground glass in the rear of the draw-box in the eight by ten plateholder groove, excluding the light with a focusing cloth.

If the camera has a fixed back it will be necessary to extend it in order to get the negatives some distance away from the lens. This may be done by attaching a small box two or three inches in depth, from which the bottom has been removed, to the back of the camera by means of rubber bands. An opening a little smaller than the negative is cut in the cover and the negative fastened to it upside down and with the film side facing the lens. By shifting the position of the negative from side to side or up and down some interesting detail or part may be made to fill an eight by ten sheet of printing paper.

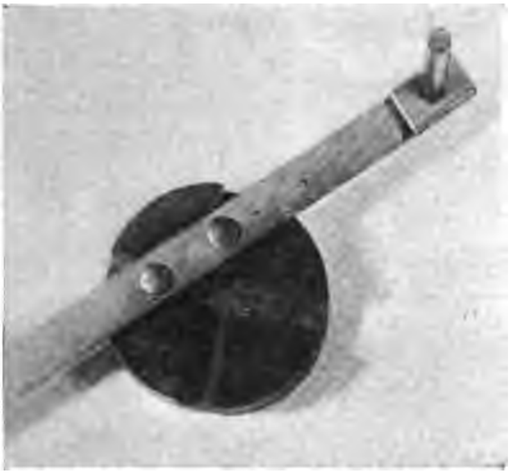
The rays of light are projected strongly and evenly through the negative and lens by means of a reflector. For this make a frame of wood fourteen inches wide and eighteen inches long, over which stretch heavy white paper. Fasten the reflector close to the back of the camera at an angle of about forty-five degrees. Place a small box under the camera to bring it to the proper height for the lens to enter the enlarging box. A plank supported by trestles may be used to rest the outfit on, or a table would serve. To use the enlarger: fit a negative in the camera, extend the bellows front and clamp, open the shutter and place the camera in position with the lens in the small opening in the center of the cardboard end of the enlarging boxes. Pull out the draw-box as far as you think necessary to give the proper degree of enlargement for this negative. With a focusing cloth over your head hold a sheet of ground glass inside the draw-box. If the image appears clear cut, when the ground glass is in the plateholder groove, then the camera is properly focused for this position of the boxes. If the image is blurred the camera bellows must be racked in or out until the image appears sharp. Now close the shutter and set it on time. Load the plateholder with a sheet of printing paper in the darkroom, place it in the enlarger and expose, after which return the holder to the darkroom and develop the print.

Printing is done out of doors or in the house through a window whichever happens to be most convenient. A north light is preferable, as it is more uniform. A bromide enlarging paper is more satisfactory than the ordinary developing, or gaslight paper, on account of the short exposure necessary. This is a decided advantage, as in cloudy weather enlarging may proceed with ease. With a clear sky in the middle of the day a few seconds exposure is all that is required.

By this adaptable method of box enlarging you are not obliged to treat your negatives alike as would be the case in using the usual fixed focus type, for by means of the sliding box you are able to vary the degree of enlargement and so bring out the good points in each negative — ELMER L. GOODWIN.

MARKING OUT ELLIPSES — The easiest way of marking out an ellipse is by means of a "trammel." This is by no means a new tool, but it is not as well known as it might be. It is simple to make, will last indefinitely, and is ready for use at any time. To an ellipse, the trammel bears the same practical relation as a pair of compasses bears to a circle.

A simple form of trammel, capable of designing ellipses with certainty and ease, can be made from a circular piece of hard wood, a strip of three-ply, and a few small pieces of mahogany or other durable wood. The circular piece should be about ¾ inch thick, and the small pieces about half as thick. Two channels are cut at right angles across the face of the circle, meeting in the centre of it. They should be about ⅜ inch deep and the same measurement in width if the circle is not less than 3 inches in diameter, this latter dimension depending on average size of the work to be done with the trammel. The strip of three-ply must be a little longer than the long radius of the largest ellipse to be drawn, and about ½ inch wide. From the bits of mahogany, a piece is selected and cut 1 inch by ½ inch by ½ inch. This is glued to one end of the strip and when it is set, a hole just large enough to hold a pencil is bored through both. Two other small pieces are cut just wide enough to slide easily but without looseness in the channels. These pieces should be slightly longer than they are wide, and deep enough



to be flush with the face of the circular block. The corners are rounded slightly with sand paper, and the sides are treated with a little French chalk or graphite, the object being to make them slide smoothly the whole length of the channels without being tripped or impeded at the junction. A line drawn along the centre of the strip can be marked with inches and fractions to facilitate measurements, but this is not essential if a rule is always handy when working. Two stout and fairly long drawing pins to pass through the three-ply and act as pivots for the slides, complete the equipment.

The sizes that can be covered will depend on the size of the circular block, as the following examples show.

A

Diameter of block..................3 inches
Suitable dimensions for channels
  Diameter........................3/8 inch
  Depth.......................... 3/8 inch
Shortest radius practicable............2 inches
Range of difference between radii
  from 3/4 inch to 2 inches
=Range of difference between length and
  breadth of ellipse....from 1 1/2 in to 4 inches

B

Diameter of block..................6 inches
Suitable dimensions for channel same as (a)
Shortest radius practicable............4 inches
Range of difference between radii
  from 3/4 inch to 4 inches
=Range of difference between length and
  breadth of ellinse...... from 1 1/2 to 8 inches

Thus with a 3 inch block, an ellipse measuring 5 1/2 x 4 can be set out, or one any size larger, provided that the length does not exceed the breadth by more than 4 inches. With a 6-inch block, an ellipse 8 1/2 x 7 can be drawn or any size larger provided that the length does not exceed the breadth by more than 8 inches. Actually, there is some allowance beyond these limits, but with 3/8 inch sliding blocks and channels it is not advisable to expect more, and if narrower movements are used, the cutting is more difficult. A 1 inch block would need channels of about 1/8 inch which might necessitate professional workmanship. It would however give very small ellipses with fine differences of measurements.

The trammel in the illustration is made with a 3 inch block, and differs from the above description only in the pencil holder which is merely a layer of three-ply. For general work it serves very well, but for special requirements there is room for various modifications and elaborations. For mounts, where the center postion is not important, a grip can be given to the block by driving two or three needles through till they project on the under side about 1-16 inch. The tops are snapped off and filed flush with the face so as not to impede the free cycle of the strip. Needless to say, such a grip cannot be used on prints, but if there is any tendency for the block to slip, serge or baize can be glued to the bottom, and this will improve things. While drawing pins serve as pivots, and are easily fixed, more stable contrivances may be imagined. If the trammel is for one size only, the pivots can be permanent, and small screws can be put in. Alternative methods of the adjustable movement are, by boring fine holes along the strip at say, eighths of an inch, and using stouter pivots, say glass push pins, and by making use of sliding grips such as are seen on the bars which are used to keep French windows open. I cannot find out the technical terms for these adjustable fasteners nor where they can be obtained, but they combine the necessary movements in an ideal form, allowing for both pivoting and adjustable sliding at once. Another improvement is to cut the channels and sliding blocks in dovetail. This obviates any jumping or slipping out, though it is not absolutely necessary and is a more difficult operation than square channelling.

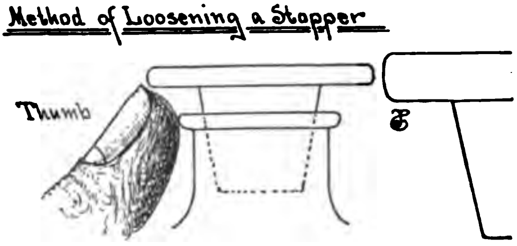
While the trammel is specifically designed to draw ellipses, it is plain that it can be used for circles also. To do this, it is only necessary to remove one slider and hold the other in the centre of the block while the strip and pencil are revolved around it. — J. R. HALL.

A FORMULA FOR A FINE, STRONG PASTE. — For many years, the writer was connected with an art store, and had occasion to use large quantities of adhesive, not only in mounting prints and other pictures, but in making mats and in various other ways, in which a very thin, but strong paste, was required. After considerable experimenting, the following formula was devised, and all the paste used was made after it for many years, as long as the writer was in business, and afterward in his amateur photographic work.

Any quantity may be made, from an ounce upward. Take as much starch as desired. Dissolve it in water, stirring it until it is all dissolved, then set it aside to settle. Use an enameled ware vessel. In another enameled ware vessel, pour as many ounces of water, as you have of starch. Heat the water until it is luke-warm, and then dissolve therein some FINE, WHITE, cabinet-maker's glue. The quantity, of course will depend on the quantity of paste that is to be made. Enough should be dissolved, so that the water will feel smooth when the fingers are dipped into it, and rubbed together; they should feel "tackey," and stick together a little. If the glue is slow in dissolving heat it up a little, and when dissolved bring the glue-water to a boil. Now pour off all the water possible from the starch, and then pour on it, slowly, the boiling glue-water, stirring it continuously with a large spoon or ladle. It will soon be milk-white, and very smooth. Now stir in it some oil of cloves as a preservative. The quantity will of course vary, depending upon the amount of paste, but the odor should be quite perceptible, but not much is required at the most. While still warm, the paste should be placed in a stone-ware or glass container. For his own use, the writer placed it in stone butter-crocks, which would hold a gallon. He sold a good deal of it, however, and this was placed in glass jars, with a glass top, which were obtained at a crockery store. They were used to hold sugar, primarily, the sides being straight. Tin tops or covers must not be used, as the metal causes the paste to rust and discolor. There will, or rather, should not be any scum or skin on this paste when it cools, if it is properly made. This paste will keep a long time, the writer having frequently kept it for more than a year.

To use, take a little out of the jar, and place in a cup or other suitable vessel and thin down as required, with water. This paste is exceedingly strong and tenacious, and may be used very thin.—George Reed Stevens.

Removing A "Stuck" Stopper. — It is not an unusual occurrence for the photographer to find that a glass stopper has become fast in one of his bottles. Many methods of removing these refractory stoppers — such as heating the neck of the bottle in a flame, heating the neck by the friction of a string, tapping the stopper with an upward motion, etc. — are frequently advocated. Sometimes the heating method works, but usually, as far as my experience goes, it does not. Striking the stopper with an upward motion often does the trick, but unless the blows are delivered with extreme accuracy the rim of the neck of the bottle is very likely to be chipped.



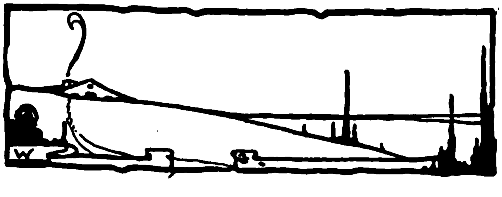
Being engaged in biological work, and handling a good many museum jars, the stoppers of which are much given to sticking, and which are, more particularly at the present time, so expensive that one tries to avoid any damage to them, I have tried many ways of removing these "stuck" stoppers. I have found the most successful method to be as follows — place the thumb of the left hand under the rim of the stopper (as shown in the cut) and press strongly upwards and inwards, at the same time tap the opposite side of the stopper sharply, yet gently, with the rim of a larger glass stopper. Turn the bottle and repeat the operation until the stopper loosens. In this method the thumb of the left hand plays a two-fold part; it lifts the stopper and it takes up the jar of the blows and prevents the breaking of the neck of the bottle. I have tried tapping as above with a piece of wood, but the use of a larger stopper as a hammer is more efficient than the piece of wood, and moreover the stopper is usually at hand.—A. Brooker Klugh.

DEVELOPING AND FIXING FORMULA

Recommended by Eastman Kodak Company
For G. C. C. Chemical Stoneware Developing Tanks.

	For 14 Gal. Tank	For 18 Gal. Tank	For 24 Gal. Tank	For 29 Gal. Tank
Developing				
Water (125° fahr.)	2 Gal.	2½ Gal.	3 Gal.	3½ Gal.
Elon	155 Gr.	200 Gr.	265 Gr.	320 Gr.
E. K. Co. Sulphite of Soda	17 Oz., 129 Gr.	22 Oz., 230 Gr.	30 Ozs.	36 Oz., 130 Gr.
Hydrochinon	1 Oz., 58 Gr.	1 Oz., 330 Gr.	2 Ozs., 140 Gr.	2 Oz., 360 Gr.
Potassium Metabisulphite (or Sodium Bisulphite)	238 Gr.	300 Gr.	400 Gr.	1 Oz., 55 Gr.
E. K. Co. Carbonate of Soda	9 Oz., 127 Gr.	11 Oz., 315 Gr.	15 Oz., 440 Gr.	19 Oz., 100 Gr.
Pyro	3 Oz., 160 Gr.	4 Oz., 140 Gr.	5 Oz., 335 Gr.	7 Oz.
Potassium Bromide	90 Gr.	120 Gr.	155 Gr.	205 Gr.
Add enough water to make	14 Gal.	18 Gal.	24 Gal.	29 Gal.
	For 14 Gal. Tank	For 18 Gal. Tank	For 24 Gal. Tank	For 29 Gal. Tank
Fixing Bath				
Water	8 Gals.	10 Gals.	15 Gals.	15 Gals.
Hypo	29 Lbs.	38 Lbs.	48 Lbs.	60 Lbs.
Velox Liquid Hardener	120 Ozs.	1 Gal., 25 Oz.	1½ Gals.	1 Gal., 120 Oz.
Water sufficient to make	14 Gals.	18 Gals.	24 Gals.	29 Gals.
The following formula may be used if desired:				
Water	8 Gals.	10 Gals.	15 Gals.	15 Gals.
Hypo	29 Lbs.	38 Lbs.	48 Lbs.	60 Lbs.
After Hypo is dissolved add following hardening solution as per above instructions:				
Water	2 Gals.	3 Gals.	3 Gals.	3½ Gals.
E. K. Co. Sulphite of Soda	14½ Ozs.	20 Ozs.	1 Lb., 10 Oz.	2 Lbs.
Acetic Acid 28%	88 Ozs.	115 Ozs.	1¼ Gals.	1½ Gals.
Powdered Alum	28½ Ozs.	2½ Lbs.	3¼ Lbs.	4 Lbs.
After hardening solution has been added add water to make	14 Gals.	18 Gals.	24 Gals.	29 Gals.

LOON ON NEST HARVEY C. PENDERY



LOCAL MANIPULATION

When I asked a friend of mine what he considered the most potent effect of photography on his own destiny and habits, he smiled and quoted as follows:

"In the days of my youth I went in for the law,
And argued each case with my wife,
And the muscular strength that it gave to my jaw
Has lasted the rest of my life."

In explanation, he went on in this wise: "Photography is the most damnable hobby I know of for creating a rebellious and contentious spirit. One who has become steeped in the black art will argue any subject to the day of doom. I suppose it is because he becomes so confoundedly logical that he cannot help wanting to carry his point to the bitter end.

"Not long ago I was in on a discussion which illustrates what I mean. A group of photographers were looking at a photograph of a tall office building, made from a structure across the street. The question arose as to what floor the picture had been taken from. At once a violent altercation ensued. Several of those present maintained that the picture had been made from a point opposite that part of the building which in the photograph showed a horizontal perspective, if you get what I mean. One or two others maintained that the picture was taken from several floors below. You would not believe that friends could be so acrimonious as were the disputants in this case. As none of them had been present when the picture was taken, or even knew the photographer, for that matter, it was impossible to settle the question forthwith by referring the matter to anyone who absolutely knew, and the discussion therefore degenerated into reflections on one another's intelligence, the most profane epithets being passed around in token of mutual esteem, and the chances are that the session would have broken up in a grand and glorious row if someone had not started the ball rolling in a new direction by offering to bet that his contention was the right one. He was at once taken up, his bet being raised with withering contempt, others then joining in with still higher wagers until you might have thought that you were at the race-track or a bush-league game in the wilds of Missouri. Of course, those bets will never be settled, for no one knows who the photographer was nor is there any way, apparently, of finding out. I cite this instance merely to suggest how far photographers will go with an argument once they get started.

"That is only one case. My experience with photography is merely a long series of similar ones, and I am just as bad as others when it comes to holding out for my own opinion on some technical point upon which I happen to have spent a little thought. With most subjects, I wouldn't give a darn, but when anyone tramples on my own pet ideas, believe you me, I am ready with the axe, the hammer, and any other tool which happens to be handy.

"Advanced amateurs are sometimes referred to as camera cranks, and I am inclined to think that that accusation is just, if by a crank is meant one who is ready to meet all comers with complete and crushing logic when occasion so demands. I have often wondered about this. Is it because we know so much more than others, or is it because we are just naturally somewhat crazed? Of course, it must be admitted that the majority of people are little better than half-wits when it comes to a matter of pictures

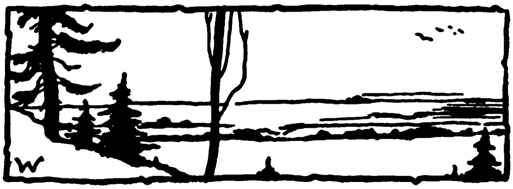
WILD DUCK IN FLIGHT HARVEY C. PENDERY

and things photographic, so that it is not surprising we should wish to set them straight when they exhibit the abysmal vacuums of their ignorance, but somehow all this intense reasoning we do seems to affect our thought processes as applied to other matters also, and we get to expressing very decided opinions on every subject under heaven.

"Maybe it is the scientific spirit. If so, I wish I could get rid of it. I would much rather go back to the old happy feeble-minded way of taking things as they come instead of thinking everything out and having an opinion of my own on every subject. I don't want to be logical; I want to be comfortable. But I have got so deep into photography that I suppose I can never be truly happy and carefree again. My mind is too darn active. The damage has been done already, and it is apparently irreparable."

What a terrible thing it is to have an educated mind!

THE INTENSIFIER.



CORRESPONDENCE

Editor of AMERICAN PHOTOGRAPHY,
Sir:

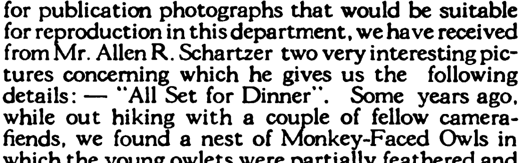
I have noticed so many inquires about the test for hypo in films and prints, that I wish to mention a much better test solution than the potassium permanganate solution. The solutions I use are as follows: —

1. 12.5 g iodine are dissolved in a solution of 18 g. of potassium iodide and 300 ccm water, and when dissolved made up to 1000 ccm with water.

2. 2.5 g of starch are dissolved in 500 ccm water (boiling) and when cool a very small pinch of red mercuric iodide added.

Both solutions will keep very well for years, that is well enough for this test. The test is made as follows: —

2 *drops* of iodine solution are added to 100 ccm water (approx. 3⅓ oz.) and enough of the starch solution added to turn it blue. The drippings from plates, films, papers, are caught in small portions of this solution. If the slightest amount of hypo is present it will turn colorless right away. This seems to be a more delicate and very much better color change than the permanganate test. Solutions can always be easily made once the iodine and starch solutions are made up. — ELMER F. SHELBERG.



NATURE AND WILD LIFE

In response to our invitation to readers to submit for publication photographs that would be suitable for reproduction in this department, we have received from Mr. Allen R. Schartzer two very interesting pictures concerning which he gives us the following details: — "All Set for Dinner". Some years ago, while out hiking with a couple of fellow camera-fiends, we found a nest of Monkey-Faced Owls in which the young owlets were partially feathered and were very odd and interesting in appearance. We took a number of pictures of the birds and resumed our tramp. A few days later we returned to the nest and took five of the young birds back with us to town. This species of owl is rarely found in our locality, the extreme north-western county of Ohio, and our pets attracted much attention. They were induced to pose before the camera many

ALL SET FOR DINNER ALLEN R. SCHARTZER

times, but as they did not enjoy captivity, and also because of the difficulty we had in supplying them with mice and sparrows, their favorite diet, after keeping them about three weeks, we gave them back their freedom.

We are not at all surprised that Mr. Pendery was able to surprise and mystify his friends when he showed them such pictures as "Loon on Nest" and "Wild Duck in Flight," they are so well mounted and the setting is so realistic that they might easily deceive anyone who was not aware that they are photographs of mounted museum specimens made in the Academy of Sciences, Lincoln Park, Chicago. Both were photographed by electric light with an exposure of one minute at *f*:8. In his letter accompanying these pictures Mr. Pendery writes — "In compliance with the invitation printed on page 262 of the April issue, I am sending you herewith some pictures made by me recently which, while not actually taken in the habitats of the specimens photographed, appear to me to be rather creditable as "nature fakes" and are submitted to you as such. Many of your subscribers could get such pictures as these in the museums of the large cities. In these particular cases they have afforded me a lot of amusement as my friends begin to wonder on seeing them — "How in the world did you do it?" and so forth."

THE QUESTION BOX

BEST ANSWER TO MARCH QUESTION FOR READERS

If you were building a house for yourself and could include a darkroom in the plans, how would you locate and arrange it?

If I were building a house for myself, it would very likely be of the "bungalow" type. I should locate the darkroom on the first floor, opening off the small hall which usually gives access to the bathroom and bedrooms, and next to the bathroom if that could be arranged.

The room is to be nine feet long by six feet wide. The door is to be in the long side, as near to one corner as possible, and opening outwards. A door two feet, six inches wide, or perhaps less, will be ample. To make it light tight, the threshold should be at least two inches high, with the face of the door shutting against it. There should also be a two inch stop all around the door, which should be hinged at the side next to the corner.

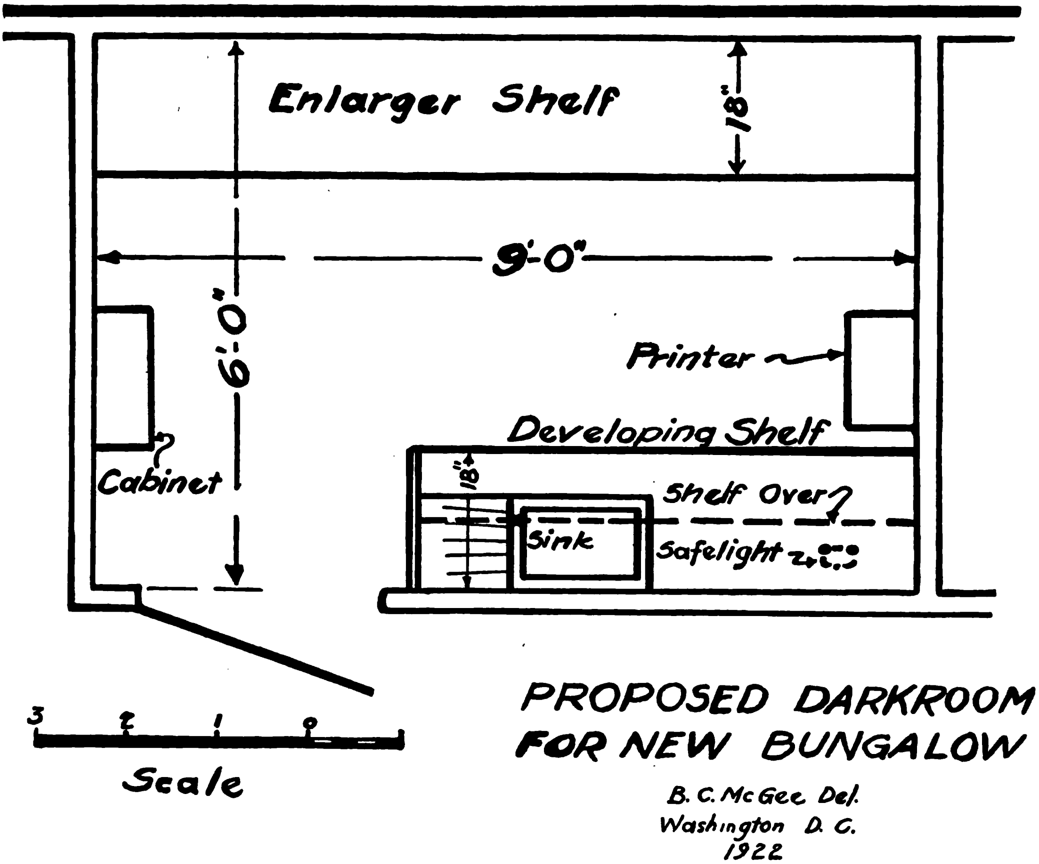
The developing table is a shelf, 18 inches wide, against the wall on the same side as the door. The sink and drain board are at the end next to the door. Against the door casing is a solid partition, 18 inches wide, extending from the floor to the top of the door, to cut off any light leaking in around the door. The sink and drain board should be small. If the sink is less than 18 inches wide, the work shelf may be extended past it to the partition. Over the work shelf is another shelf 9 inches wide, five feet and a half from the floor, for bottles, trays, etc. A "Brownie" safelight may be hung from the underside of the bottle shelf in a light wooden frame, located so as to throw its light upon the developing tray. The top of the work shelf should be three and a half feet from the floor.

On the long side opposite the door is another shelf, 18 inches wide, three and a half feet high, for the enlarger.

On the short side, at the door end, is a cabinet about eight inches deep and 18 inches wide, to hold films, plates, paper, plate holders, etc. The bottom shelf would be a good place to put the scales. This cabinet should have a door sliding upward, counterbalanced. At the other short end of the room is placed the printer, its top level with the top of the work shelf. Printing paper in use may be kept on a small shelf over the printer.

General illumination, and for printing, is furnished by a semi-indirect box hung from the ceiling. The box has a solid bottom, with glass sides covered with yellow paper. I think a 15-watt lamp would give enough light. When enlarging, a small lamp colored red may be used. Assuming the walls to be plastered, they should be kalsomined yellow, as well as the ceiling. Woodwork should also be painted yellow.

A long "gooseneck" faucet, that will deliver a small stream quietly, should be used in the sink.



rather than the usual kitchen type. The sink should be enameled iron, with nickeled strainer. A rubber sink stopper would be useful. Hot water is not necessary, although it is useful when washing dishes, glassware, etc.

In this case, the question of cost is difficult. A darkroom such as I have outlined would add something to the cost of a new house. I believe the extra plumbing and wiring would be the principal added items. If the owner were handy with tools, he might put in the various shelves himself, and save the labor cost. — Bernard C. McGee.

In a letter Mr. McGee adds:

"My plan could be used equally as well to install a darkroom in the attic or cellar of a house already built. Walls could be built out of compo board, with other arrangements as I have outlined."

OTHER ANSWERS

A PROPER DARKROOM

It has been said with truth, that " a picture by photography is a work of art." It may also be said with equal truth that the picture is dependent upon the negative, and that the negative is a purely scientific, technical, chemical work.

More good material is wasted through improper technique than lack of artistic appreciation. The two principal enemies of a good negative are dirt and dust, and too much or uncontrolled, light.

A darkroom should be dark excepting as its user may direct, and to this end, is best built with lath and plaster walls, having properly fitted door or light trap, and above all things, a ceiling free from piping and other dust collectors. This ideal cannot be obtained by many non-professional workers, and the nearest approach to it is accomplished by using wall board on a studding partition, first facing the partition with black building paper carefully cut to fit and well secured. It is desirable, but not essential, to cement the laps of this paper with regular roofing cement. The wall board should be cut or the studding so placed that the butt joints occur on the studding, in which event it is not necessary to cover the joint, leaving the inside wall smooth. It is, however, much more workmanlike to use a narrow cover strip, possibly 3 inches wide, over each joint.

Ventilation should be provided by an ample sized hole to the outside, protected with a light trap built from the wall board, and if possible, supplied with a small electric fan, so arranged as to blow air out of the room at the top. Details of all this work must be adjusted to the conditions.

The location of the darkroom will usually be determined by convenience, but as one of the important requirements is a uniform temperature, a dry basement is much to be preferred, and when this location is decided upon, a well-made wooden floor with a 6-inch air space above the basement floor, is essential. If this floor can be covered with battleship linoleum, so much the better.

Criticism Print No. 27

The writer has succeeded in acquiring a darkroom technique without quite complying with all of the requirements as stated, and it is because of the failure of his own equipment, that the design has been changed.

The room should not be less than 6 x 10 ft. and it would be better to be 8 x 12 ft. It should have a bench on one side about 2 ft. 6 in. wide, and of convenient height for an enlarging apparatus. It is more convenient to have the illuminant for enlarging, outside of the room, but not necessary.

A printing equipment of some sort, either home-made or purchased, providing for independent control of two or more sets of lamps, can adjoin the bench at one end of the room, and a sink with shelf for hypo occupying as much of the length of the opposite end as possible. It is a great convenience to have both hot and cold water, and very useful to have two or even three, cold water taps. Any obtainable form of sink may be used, but one not more than 6 inches deep is in the long run, more satisfactory than the customary deep wooden structure of the older type darkrooms; wooden slats which wedge two or three inches from the bottom, are convenient. On the side opposite the shelf for enlarging apparatus, there should be several conveniently spaced shelves to carry miscellaneous material, with a double spacing somewhere in the line for scales and weights. Over the shelf for enlarging apparatus, if there is sufficient height, can be a shelf for papers and other enlarging materials. All sensitive paper keeps better when stored on edge, as it is not so likely to become scratched in handling, and it is convenient to have something in the way of guides to keep it in this edgewise position, if much paper is to be stored.

A general safe light of the inverted type may be constructed effectively from a box built of wall board, provided with several wall receptacles, and wired to a convenient switch, each group of lamps being shielded with proper colored glass or fabric so that either one of three forms of safe light may be had at will.

There are so many articles describing the building of photographic appliances from cracker and soap boxes and the like, that I hesitate to intrude in this field, my own preference being for apparatus built properly, to function as intended, without in any way being a make-shift.

A 6 x 10 ft. darkroom, properly equipped, can be constructed for from $100.00 up, according to the number of mechanical appliances that is desired, and if the thing is worth doing at all, the darkroom is the first place to which attention should be given, as it is through the proper conduct of experimental work in negative-making, that successful technique is developed.

The writer has found that successful negatives can only be made under proper conditions, and is inclined to the belief that where a worker produces a satisfactory picture with a make-shift darkroom, there are a great many failures of which we are not advised. Those workers who turn out a high proportion of successful pictures are careful and painstaking in all their work, and usually have a workroom well equipped for the purpose. The professional worker is also subject to this rule, and frequently has a darkroom equipment of which many amateurs would be ashamed.

It does not seem practical to submit drawings, or even sketches, as the shape, size and lay-out must be arranged to suit the space and conditions, but there are some items that should be given careful attention.

First of all, scales and graduates; for the former, the best that can be procured with the means available, is none too good; for the latter, the regular engraved cyclinder, if metric measurements are adopted, or the new Bureau of Standards shape for Apothecaries' measure, and not the pressed line notoriously inaccurate type so commonly offered by dealers in photographic supplies.

The next important item is storage bottles for solutions. Much has been said about glass stoppered bottles. Unless these stoppers are oiled with a mineral oil, they are not safe to use with any alkaline solution, as they sooner or later weld themselves in the neck and cannot be removed. All things considered, a high grade rubber stopper of the gray or brown variety, but not red, best serves the purpose. They are also less expensive, and bottles sufficient for all ordinary photographic work may be obtained in uniform sizes of 4, 8, 16, 32 ounces, ½ gallon and gallon sizes, including stoppers, with a few extra, for about $5.00. Two or three dropping bottles with ordinary eye droppers fitted through the stopper, should be included.

An ample supply of labels is essential, and can be procured from the Dennison Company, in books, with a blotter, bound in, and may be written on while in the sheet, blotted and then torn out A small bottle of flexible collodion to varnish the label after attachment is a great help. It is wise to describe the formula, the source of supply of its materials, and the date when it was mixed, upon the label. A convenient way to do this, is to have a master label showing the formula and its intended use, and a secondary label which is replaced each time the formula is made up fresh, bearing the date and information as to source of supply. Stale solutions never make good work, and time passes without note for most of us.

It is a fallacy to use the ordinary amber bottle as protection against light, and it is far better to keep the bottles in a dark cupboard. Practically all amber glass passes sufficient blue and blue green light to do much damage.

A laboratory stand with rings and clamps is very convenient for filtering and holding funnels in filling bottles, and a supply of funnels, absorbent cotton and filter paper, are important. A few test tubes and test tube rack will come in handy. The extent of apparatus of this sort will depend upon each worker's ambitions, but I feel sure that if more attention were given to the darkroom and its equipment, there would be both a greater interest in photography and better pictures. — JOHN A. SEAVERNS.

The following is my answer to your question in the March number of your magazine, on including darkroom plans in a house being built.

I would divide the rear of the second floor into two rooms, each room as long as half the width of the house, and about ten feet wide. One room would be the bath room, and the other the darkroom. I would put another wall, inside the wall built, in the darkroom, leaving a space between the two walls, about eight inches wide, on three sides of the room. A good sized sink would be put in the room, piping the waste to the waste in the bath room. Also run water pipe from the bath room.

I would have two electric lights in the ceiling. One an ordinary lamp, with single pole switch. The other would be a ruby lamp, connected, in conjunction with a three-way switch (one switch) so that when the ruby lamp is burning, and the switch is turned, the ruby lamp goes out, and the electric enlarger, printer, or other apparatus is lit simultaneously. When switch is turned the second time, the operation is reversed.

I would build several cupboards between the two walls, about thirty inches high, eighteen inches wide, and the depth, the distance between the walls.

On the side on which there is no double wall, I would put the sink and water, and also a long table, with two collapsible legs, in front, and hinge the back to the wall, allowing it to be lowered against the wall, out of the way.

I would have no windows in the darkroom.

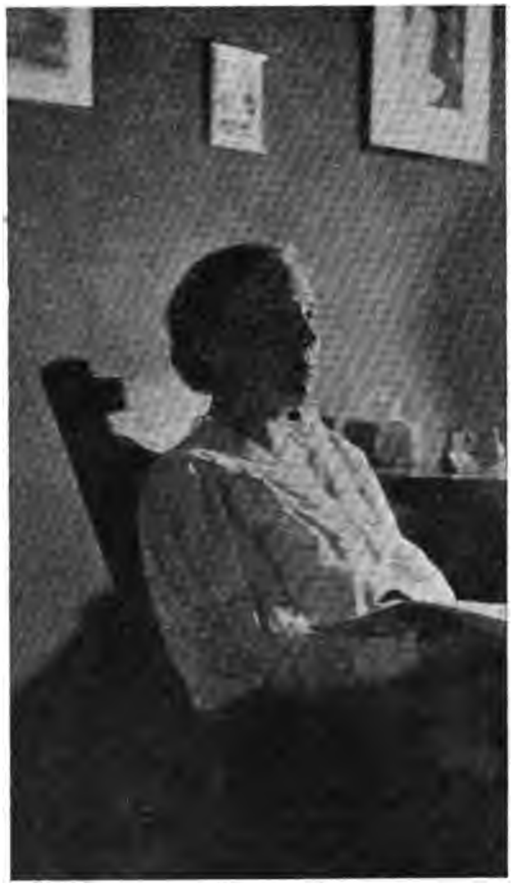
Different workers might be able to think of various other things, but the room described would be ideal for my personal use. — No signature — A Cincinnati Reader.

Other answers will appear next month.

JUNE QUESTION FOR READERS

What is a combination negative, what is its use, and how is it made?

For the best answer to this question received by July 15 a credit of $2.00 towards books of our publication will be awarded. Address the Question Box Editor, and write any other communication on a separate sheet of paper.



New Criticism Print No. 30

THE WAY I LOOK   W. O. WILLIAMS

READERS' CRITICISMS

BEST CRITICISM OF PRINT NO. 27

To quote another critic: "To be able to judge a print rightly, a person ought to be able to carry out the old proverb 'Put yourself in his place.' In other words, one must be able to see the view as the photographer saw it, to try and understand the impression the photographer felt, and to be in sympathy with him." Here we have the elements of a good picture but are uncertain as to what appealed to the photographer when he made it. Was it a mood of nature, revealed in the naked branches and hazy fall sunshine? Or was it the brook? Or the building seen through the trees? And what is the building, a camping place, deserted farm house, or a tumble down shack? Perhaps the picture was merely a pot-shot at what looked like good photographic material. A title would reveal much more than the picture itself does.

Our first general impression in looking at the picture is that the maker has a good idea of pictorial balance. The house seems well placed, the brook leading up to it nicely. The panel type is a welcome change from the more usual broadcast variety.

But the trees along the left margin are not very interesting. The mass at the right is rather dense and we cannot see beyond it. And the foreground is confusing. Retaking the picture from a point under the leaning tree at the left would enable us to eliminate these imperfections. There is a suggestion of a field lying beyond the house; if so, the new viewpoint would provide a place for the eye to rest upon instead of stopping and floating back in the brook. In making the exposure give two or three exposures of 1-25 second instead of one longer one.

The present print could be improved by trimming off the lower waterfall, the group of trees at the right and the large tree at the left. — Ralph Beebe, 2920 Hillger Ave., Detroit, Mich.

OTHER CRITICISMS

Although this print includes several of the things which are necessary for good composition, the whole does not make a very successful picture.

The fact that the camera was focused at 15 feet would indicate that the first cascade was meant to be the center of interest, or perhaps it was done to give the background that slight diffusion which sometimes adds to the pictorial quality. I do not consider that the stream is sufficiently attractive to warrant the treatment which it has received. I cannot determine what the white patches on the water represent, but they certainly detract from the possibilities of the picture. (Some critics say they are ice. — Criticism Ed.)

The background is well rendered, but too much space is given to the trees, which are neither essential nor interesting.

I do not believe that trimming will help this print, but I should say that this place has good pictorial possibilities. If the person who took this photograph were to return and try again, I am sure that he would have better success. He might get several photographs of the stream by giving his attention to only one cascade at a time. The clumps of bushes and the trees along the banks would give him several more. And, lastly, he could take several, from different viewpoints, of the old house in the background. — J. Clark Lennon.

This print calls for few words — and simple, though drastic treatment.

Trim extensively.

Remove two inches from top; seven-eighths inch from right; one and one-sixteenth inches from bottom; one-quarter inch from left.

The picture remains, roughly speaking, twenty per cent of the original negative.

Cameras making "panel-shaped" negatives are in my opinion notorious film-wasters anyway in a great majority of exposures. — E. A. Ellsworth.

Comments by Criticism Editor. — One or two critics, finding fault with the lack of sharp definition, thought that a smaller stop than *f*:11 should have been used. The C. E. feels, however, that although the focus may not have been placed to the best advantage, a smaller stop would have given a flat wire-drawn definition without the separation of planes, which is here seen. Compare the print in this respect with others of the same general type which are very sharp throughout.

NEW CRITICISM PRINT NO. 30

Readers' Criticism Print No. 30 was taken with a 2C Kodak Junior and R.R. lens, by the light of one 200-watt lamp, against a dark green background. The exposure was 20 seconds at U. S. 4. The negative was developed in metol-hydrochinon and printed on Azo Hard Medium, grade E, which was developed in the same developer.

For the best criticism of this print received by July 15 a credit of $2.00 towards books of our publication will be awarded. Address the criticism editor, and please write on one side of the paper only.

OUR COMPETITIONS

SENIOR COMPETITION

The first prize in the Senior Competition was awarded to George W. French for his picture entitled "Out of Work," a very well worked out genre study. The concentration of lighting on the figure is excellent and the whole setting is well worked out. With this well merited award Mr. French has moved up in the Roll of Honor into the class of first prize winners, having received five awards of this value.

Some readers have objected that certain workers receive too many awards. The Roll of Honor was instituted in August 1916. In other words, it has been running for seventy-one months. During that time Mr. J. H. Field, who has won eight first prizes, has submitted one or occasionally two prints every month almost regularly, and very rarely has he submitted a print which has not been of great originality of arrangement and perfect technique. His eight first prizes in this time do not indicate that even a worker of the highest class can obtain a very large share of our awards. During this same period Mr. George W. French has sent in from two to a dozen prints almost every month. Of all of these hundreds of prints there has hardly ever been one which was not far above the average in all the qualities which go to make a picture and the majority of them were good enough to win honorable mention or prizes, but Mr. French also has not won an inordinate number of prizes. If some of the readers who have complained that the same names appear regularly in the prize winning list would produce as many good prints and send them in as regularly as these two workers have done, they would have no cause to complain of their own standing in the Roll of Honor.

Mr. French's picture was made in Maine at 6.30 A. M. in August with a fourteen-inch Rapid Rectilinear lens on a Seneca camera. The exposure was four seconds at *f*:8. The enlargement was made on buff Mimosa.

The second prize was awarded to Gregory L. Oliver for his print entitled "Indian Ponies." The photographing of a group of animals, especially half wild creatures, in such a fashion as to make a composition which possesses any of the feeling of arrangement which an animal painter would give it, is a matter either of fortunate chance or extremely hard work. The making of a picture of this kind would probably require a great deal of stalking and even then the chance of getting light and dark animals as beautifully arranged as in this print is infinitesimal. We must congratulate the maker of this print for finding his chance and availing himself of it when it was present. The arrangement would be difficult to better. Made with a 3A Graphic camera fitted with a 9 inch Smith Synthetic lens. The exposure at 11 A. M. in December in bright light in Arizona was 1-40 second at *f*:5. The Premo Flimpack was developed in Premo tank developer and enlarged on Bromide.

Two third prizes were awarded. One was given to Stefano Bricarelli for his very interesting and story-telling print entitled "Girl Watering Flowers." The frame of fruiting vines on a brick arch is in itself attractive and the accessories of the flower pot, the pitcher and the costumed girl all contribute to make an unusual and interesting picture. This was made in a country house near Turin, Italy, with a Thornton Pickard 9 x 12 cm Reflex camera fitted with a 7¼ inch Zeiss Tessar lens. The exposure at 10.30 A. M. in October in bright light was 1-5 second at *f*:6.3 with a 2-times filter. The Imperial Ortho Special Sensitive plate was developed with Monomet and enlarged on Illingworth Cream Smooth Bromide.

Another third prize was awarded to W. R. Bradford for his print from his "Vegetable Vaudeville" series, other examples of which we hope to have the privilege of showing to our readers from time to time. Mr. Bradford is a cartoonist on the Philadelphia North American and has produced some very interesting prints of this type to which he has written appropriate rhymes. His letter of submittal says all that needs to be said in regard to the print.

"AMERICAN PHOTOGRAPHY,
Boston, Massachusetts.
Gentlemen:

"Am entering two prints: 'Vegetable Vaudeville' series. Same data, as to manner of execution, and material, apply to both. The print that is not selected for competition, may be run as a 'horrible example' — the 'which' that diddling with amateur photography brings a person to.

"Remedy? Alas, there is none — but the grave.

"(In my mind's eye I see myself at the age of 91, falling down on the floor of a bathroom-darkroom, owing to overexposure of the brain, due to too much photography. Oh, horrible thought!)

"Cordially yours,
W. R. BRADFORD,
North American, Philadelphia"

Data: 4 x 5 Cycle Graphic, Beck Rectilinear, 11-inch focus, W. & W. Panchromatic plate, light from one 100-watt nitrogen bulb, *f*:11, 6 seconds, elon-hydro developer, enlarged on glossy Artura Carbon Black.

Honorable mentions were awarded as follows:—

No Place Like Home	J. H. Field
Portrait	Harry Edw. Horrigan
The Dell	Jiro Ito
Valley Forge, Pa.	W. Kitchen
Jeanne d'Arc	Lyle A. Morse
Marten	Juventino Ocampo
Halycon Days	J. H. Saunders

Commendations were awarded as follows: —

A Glimpse of Independence Square	A. C. G. Allison
Crater of Vesuvius	Walter L. Bogert
Meditation	F. E. Bronson
Bride and Groom	Fred E. Crum
The Day's Beginning	Louis A. Dyar
The Messenger's Speech	Don Fitts
A Windy Day on the Marsh	Wm. Hodges
The Beeches	E. Everett Jones
A Portrait	Frank H. Luwen
Scrub Oaks	Dr. E. L. H. McGinnis
Spring-time	Alexander Murray
Concentrating	J. A. Murray
Autumn Path	H. B. Neal
A Springtime Symphony	Frank R. Nivison
Solid Comfort	Arthur Palme
Just a Little Girl	D. Prince
Summer Landscape	H. B. Rudolph
Plow-time	James J. Ryan
On the Shady Hill Slope	Allen R. Schartzer
Winter	G. W. Schinkel
Playmates	Wm. R. Sharp
A Canadian Summer Day	J. A. Singler
The Hat Box	Eleanor L. Smith
Portrait of a Lady	Jas. Thomson
An April Portrait	Mort. W. Turner
Bobbie has the Measles	W. D. Tyler
Marvels of the Deep	Elizabeth B. Wotkyns

JUNIOR COMPETITION

The first prize in the Junior Competition was awarded to A. S. Yoshida for his print "A Bit of Winter Scene." Doubtless, most of our readers would have assumed this to have been made by some country stream; it was made in the city of New York. It is a very interesting piece of composition and shows very beautiful technique. Made with a 3¼ x 5½ Graflex fitted with 7¼ inch Verito lens. Exposure at 2 P. M. in February in good light was 1-40 second at *f*:6. The Premo Filmpack was developed in tank in pyro and printed on Azo A, Grade 2.

The second prize was awarded to Milton Goldstein for "Nocturne," a picture of the type which is getting to be known in amateur circles as "big business," a realization of the picturesque qualities inherent in modern industry. This is a very interesting night picture made in Minneapolis with a 4 x 5 Graflex equipped with 6½ B. & L. Tessar lens. Exposure at 10 P. M. in July on a cloudy evening was 20 minutes at *f*:4.5. The backed Standard Orthonon plate was developed in pyro and enlarged with a Verito lens on P. M. C. No. 2.

Honorable Mentions were awarded as follows:

Inspiration	Walter P. Bruning
In the High Hills of Colorado	Theo. M. Fisher
Deserted	Edw. L. Gilroy
Humpty-Dumpty	Simon Jochamowitz
"Mars-Le Soleil luit, l'Hiver s'enfuit"	J. Sitek
Evening Thoughts	Gordon Sparling
Dreaming	P. F. Squier
A Japanese School Boy	Joseph Wada

Commendations were awarded as follows —

Portrait	Edmondo Agustini
Flowers of the Field	Wm. E. Barr
A Loving Pair	Hazel L. Bembrook
Through the Fjords	E. W. Berry
A Gray Day for Home	Dr. M. J. Breuer
Tower Falls	Lawrence S. Clark
Through the Snowy Path	F. Crossland
The Old Footpath	Rollin S. Davis
Nude Study	Robert E. DeLand
Neptune's Symphony	Wm. Delano
Oriental Study	W. E. Donahue
Winter Road	Herbert L. Douglas
Capestrano Font in Sunlight	Maude Lee Eldridge
Summer	Jas. R. Frow
Fording	Jno. E. Harness
River Curves	Willard H. Harting
Profile Study	S. Hasimoto
A View in Maine	Howard F. Heald
Outward Bound	Geo. L. Heath
Pup	C. V. Hewitt
Laurel Hill	Thomas C. Higgins
Row of Maples	Mrs. Alice K. Hinkley
Still Streamlet	K. Honjo.
The Brook	Louis Horvitska
Horseback Riders	H. Isaacson
A-Fishing	Mrs. C. H. Johnston
Eldor K.	W. Keibel
The Three Sister Oaks	Wm. B. Kemp
A Wet Day	Chas. H. Kragh
Along the Lehigh	W. W. Kuntz
A Rose	H. J. Mahlenbrock
At the Wall	J. A. Manter
Hangman's Tower	Godfrey F. Mayor
Mid-winter Evening	Thomas H. McClelland
Sunset after a Storm	Miss M. M. Merchant
100% Boy	A. D. Mitchell
Thunder Showers	Hannah G. Myrick, M. D.
Hills of New Hampshire	Miss Lilian Newton
Mist before Moonlight	Stephen J. Palickar
Hawk Chasing Rabbit	Harvey C. Pendery
Miss Sunshine	H. W. Pontin
Piling It Up	W. H. Pote
Pals	Roland W. Reed
The Old St. Joe	Paul Richardson
A Winter Sunset	C. B. Rosher
A Difficult Shot	Ford E. Samuel
At His Daily Work	Mason H. Seabury
Caldwell	Nat. S. Smith
Dorothy	C. W. Southworth
After Sunset	W. L. Thompson
Puebla de los Angeles	Ignacio Vazquez
The Orchid Corner	H. Vendelmans
Autumn Reflections	Floyd C. Welsh
December Morn	Jas. O. Wilson
A Symphony in Black and White	Harold B. Winslow
Hotel del Coronado	Jas. Woodward
Home Portrait	A. S. Workman
Meadow	John B. Ziemanski

ROLL OF HONOR

FIRST PRIZE

J. H. Field 8
George W. French 5

SECOND PRIZE

H. B. Rudolph 7
Alexander Murray 6
Kenneth D. Smith 6

THIRD PRIZE

J. Herbert Saunders 8
W. R. Bradhurst 8
F. B. Burt 8
Jared Gardner 6
Wm. J. Wilson 6
Lyle A. Morse 5

HONORABLE MENTION SENIOR CLASS

Louis A. Dyar 11
Gustav Gluecker 11
W. Fischer 11
Stuart Saba 10
Fred E. Crane 9
Herbert J. Harper 8
Edwin B. Collins 8
Juventino Ocampo 8
Carl H. Rutter 6
Oliver P. Young 6
Walter L. Bogert 5
Louis R. Murray 5
F. A. Northrup 5
Walter Rutherford 5
James Thomson 5
Elizabeth B. Wotkyns 5

COMMENDATION SENIOR CLASS

Walter R. Henn 15
Carlos F. DeMoya 14
Dr. E. L. C. McGinnis 14
Arthur Paine 13
Gus Schinkel 13
J. A. Singler 13
F. E. Bronson 11
C. M. Harris 11
E. E. Jones 11
H. B. Neal 11
Frank R. Nevison 11
A. C. G. Allison 10
B. M. Whitlock 10
J. K. Hodges 9
Frank King 9
Leo Kraft 9
E. W. Quigley 9
Herman D. Warren 9
H. K. Amamura 8
Geo. Miller, Jr. 7
Stephen J. Bushya 6
John N. Consdorf 6
Victor D. Elmere 6
R. M. Hart 6
Dr. L. Broe 5
Jas. J. Ryan 5
Mrs. Eleanor L. Smith 5

HONORABLE MENTION, JUNIOR CLASS

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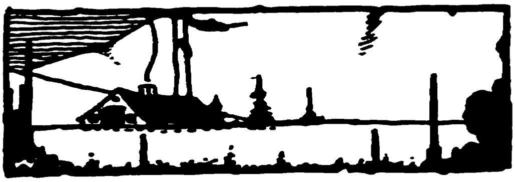


NOTES AND NEWS

Hammer's Little Book. A short talk on negative making, with many helpful formulas Hammer Dry Plate Company, Saint Louis and 129 W. 22d St., New York, U. S. A. Tenth Edition.

This is the same useful little pamphlet that has been published at intervals for many years, but, owing to the uncertainty of the markets and sources of supply during the war, it was temporarily discontinued. Now, however, in response to the thousands of requests that have been received for the book, the Hammer Dry Plate Co. have issued this, the tenth edition. In this edition the original tested formulas have been retained and many new suggestions and short cuts have been added, bringing it right up to date. No effort has been spared to make it a "right hand companion" for the studio owner and the darkroom man. The book covers practically every point in negative making and lantern slide work, including some handy tables of exposures for all stops and at all times of the year. A large number of different developing formulas are given, together with hints on development and instructions for intensifying and reducing. The Hammer Dry Plate Co. will gladly send a copy of this little book to any reader upon request.

Studies in Color-Sensitive Photographic Plates and Methods of Sensitizing by Bathing, by F. M. Waters, Jr. and R. Davis. Scientific paper No. 422, published by the Bureau of Standards, Washington, D. C.

An interesting and instructive pamphlet setting forth in plain language, and illustrated with some illuminating spectrograms, curves and tables, the methods of color-sensitizing ordinary plates and films chiefly with the newer isocyanins. It also contains a description of a specially devised spectrograph for testing the plates. The authors recommend the water-alcohol method, or an aqueous bath followed by an alcohol wash. The only points to which exception can be taken are that the discovery of the sensitizing properties is credited to Attout Tailfer in 1882, whereas as a matter of fact, this was made by Waterhouse six years previously. Tailfer & Clayton were the first to take out a patent for the use of the eosin dyes, in conjunction with ammonia, either as an addition to the emulsion at the moment of formation of the sensitive salt, or as a bath for the coated plates, and this was actually the foundation of the now universal orthochromatic plate. The other point, and we think a much more important one, is that no mention is made of the bleaching action of carbonic acid, which is nearly always present in even distilled water, on the newer isocyanins, and which considerably affects their color-sensitizing properties; and to counteract which the addition of ammonia is so largely due. A method is given by hyper-sensitizing commercial panchromatic plates and films, which may be extremely useful under special circumstances. As copies of the pamphlet may be obtained for the asking as long as the free supply lasts, and as the information is reliable it can be well recommended to experimeners.—E. J. W.

Visual Illusions, their Causes, Characteristics and Applications, by M. Luckiesh, Director of Applied Science, Nela Research Laboratories, National Lamp Works of the General Electric Co. With 100 illustrations. New York, D. Van Nostrand Company, 1922.

After classifying various types of illusions and hallucinations and proving, in his introduction, that "seeing is deceiving," the author devotes a chapter to a very interesting dissertation on the mechanism of the eye in which he shows that the eye is far from being an ideal optical instrument, though it is wonderful as an eye. Chapter 3 deals with vision, after which we are presented, in turn, with some types of geometrical illusions, equivocal figures, illusions of depth and of distance, the influence of angles and irradiation and brightness-contrasts. Other chapters deal with color, lighting, nature, painting and decoration, architecture, mirror magic and camouflage. Among the geometrical illusions and the equivocal figures are several very familiar examples such as reversible cubes, the familiar reversible staircase and Thiery's figure. In the chapter on irradiation and brightness-contrast the illusion of the same tint appearing darker or lighter according to whether it is surrounded by dark or light, is referred to. This is well known to photographers who make good use of it very often to correct or improve the tones of a picture. By mounting on a dark mount the picture is made to look lighter than it would if mounted on a white mount. In the chapter on lighting a very interesting and enlightening explanation is given of the reason why there is often a difference of opinion as to the likeness of a portrait to the subject. In fact this is a book that will be enjoyed and appreciated by thoughtful photographers.

PRICE CUTTING IS ALL RIGHT — BUT

The profiteering price cutter who takes a standard, identified, widely wanted article and reduces the standard price in order to deceive the unwary customer, is a trade pirate. He is a spider luring the puzzled customer into his web. He is not a public benefactor, he is a public malefactor. His predatory plan is to fool the purchaser by giving him a few cents on one transaction so that he may rob him of dollars on others. He is a price cutter in order to be a profiteer. He gives 25 buyers a bargain on known goods so that he may overcharge 500 customers on unknown goods. He piles up profits for his department store or mail order house by the tactics of the green goods man and advertising fakir and the deceived public foots the bill. His success, built on unfair methods, means higher price and lower quality on all goods. In the beginning he robs the consumer by fraud and in the end devours him by extortion.

The profiteering price cutter ruins the reputation of high grade goods and destroys the good will of the makers, thus stealing both purse and good name in one operation. He advertises standard goods at a loss and then seeks to persuade the public to accept substitutes on which he makes money. He demoralizes the price and the product. He forces other dealers to follow his lead or refuse to handle the article. He restricts sales and lessens distribution.

His unfair practices leave the manufacturer helpless to protect his business, into which he has put his name, his labor and his money.

The profiteering price cutter drives the small distributor to the wall by the worst form of illegitimate competition. He destroys competition by the very practices the Anti-Trust laws were intended to prevent. It is the cut-throat competitor who is everywhere and always the forerunner of monopoly. He is a restrainer of trade and a lessener of competitions. He robs the neighborhoods of their corner stores, which can give best service under fair competition. He shouts for a free market where, in a jungle war, his unscrupulous tactics may give him a strangle-hold on business.

The profiteering price cutter helps to weaken the honesty and morality of American business. He seizes any straw, however, flimsy, to free himself from moral and legal obligations to fulfill contracts and obligations. He breaks down the one-price-to-all system, which is an inseparable companion of business honesty. He is the author of many degrading tendencies in business. His spirit of disregard of fair play is encouragement to every cheat in business. He helps rot the fabric of American Commerce. He breeds the tax dodger and the canceller of honest contracts and the men who cheat but keep within the law. He encourages "gentlemen's agreements." He is an enemy of the public and he must go.

Get behind the Kelley-Stephens Better Business Bill (H. R. 11).

Notice has been sent to all members of the Associated Camera Clubs of America informing them that the 1922-1923 Print and Lantern Slide Interchanges will close with entries received at headquarters 27 Franklin Street, Newark, N. J., on September 1, 1922. Sets intended for these Interchanges must be in the hands of the respective Interchange Directors not later than October 1, 1922. These Interchanges have been running for the past four years and are made up of the work of the best clubs in America. The last Interchanges had fifteen members circulating sets and it is expected that the coming year will show both an increase in the number of clubs entered and a continued improvement in the work contributed.

The Association Secretary, Mr. Louis F. Bucher, is always glad to hear from newly founded organizations and from those contemplating the organization of a camera club or photographic society. In order to aid the formation of such bodies a booklet has been prepared under the title of "The Camera Club, Its Organization and Management" and will be sent to those interested upon application without cost. Mr. Bucher would also like to hear from newly organized clubs so that an index may be kept in order that persons requesting information of the A. C. C. of A. as to whether there is a camera club in his city may be properly answered. Letters addressed to the Association will receive prompt replies. BUCHER.

The Annual Club Exhibit of the Boston Y. M. C. U. Camera Club was held in Union Hall, 48 Boylston Street, from April 3 to April 19, 1922. Each member was entitled to submit twelve prints which were hung without action by the Art Committee. The result was a collection of two hundred and eighty prints which taxed the hanging capacity of the hall.

Considering the fact that no judging was exercised, the exhibition was of a commendably high average and there was hardly a print on the walls which lacked interest and value. Few of the prints were strong enough to outclass the general average. This fact has been noted in the last year or so in other exhibitions. It is very difficult now for any photographer to stand head and shoulders above the general average in an exhibition, for the whole standard of amateur photography has been greatly uplifted in the last dozen years.

The exhibitors, whose works seem especially worthy of mention and who show continued progress, are George S. Akasu, Louis, Astrella, A. H. Blackinton, R. E. Hanson, Ralph Osborne, W. H. C. Pillsbury, Gustave H. Seelig, Alfred F. Shurrocks, and Herbert B. Turner. — F. R. F.

The Ottawa Camera Club of Ottawa, Ont., Canada, has been successfully launched and starts out with an initial membership of eighty. The officers of this new club are: President, J. Montagu Bate; Secretary, W. H. C. Carriere; Publicity Committee, Messrs. Turnbull, Rutherford, Sproule, Welch, Cotty and Ed. Archibald. It is the intention of the officers to secure immediately suitable quarters properly equipped with all that such an organization needs, and it is expected that the membership will be between a hundred and fifty and two hundred in six months.

A very interesting collection of prints by Mr. Herbert B. Turner, Mr. Raymond E. Hanson and Mr. Ralph Osborne was hung in the exhibition gallery of the Society of Arts and Crafts, 9 Park St., Boston, from May 3rd to May 16th. Many of these pictures had been shown previously at the annual exhibition of the Union Camera Club, but they were well worth seeing again. Those we specially liked were No. 12, "Ordway Place" by Mr. Osborne, Nos. 41, 59 and 62 by Mr. Turner and Nos. 144 and 140 by Mr. Hanson. In No. 45, Lake Louise, by Mr. Turner, the big, open spaces are very well suggested. — A. H.

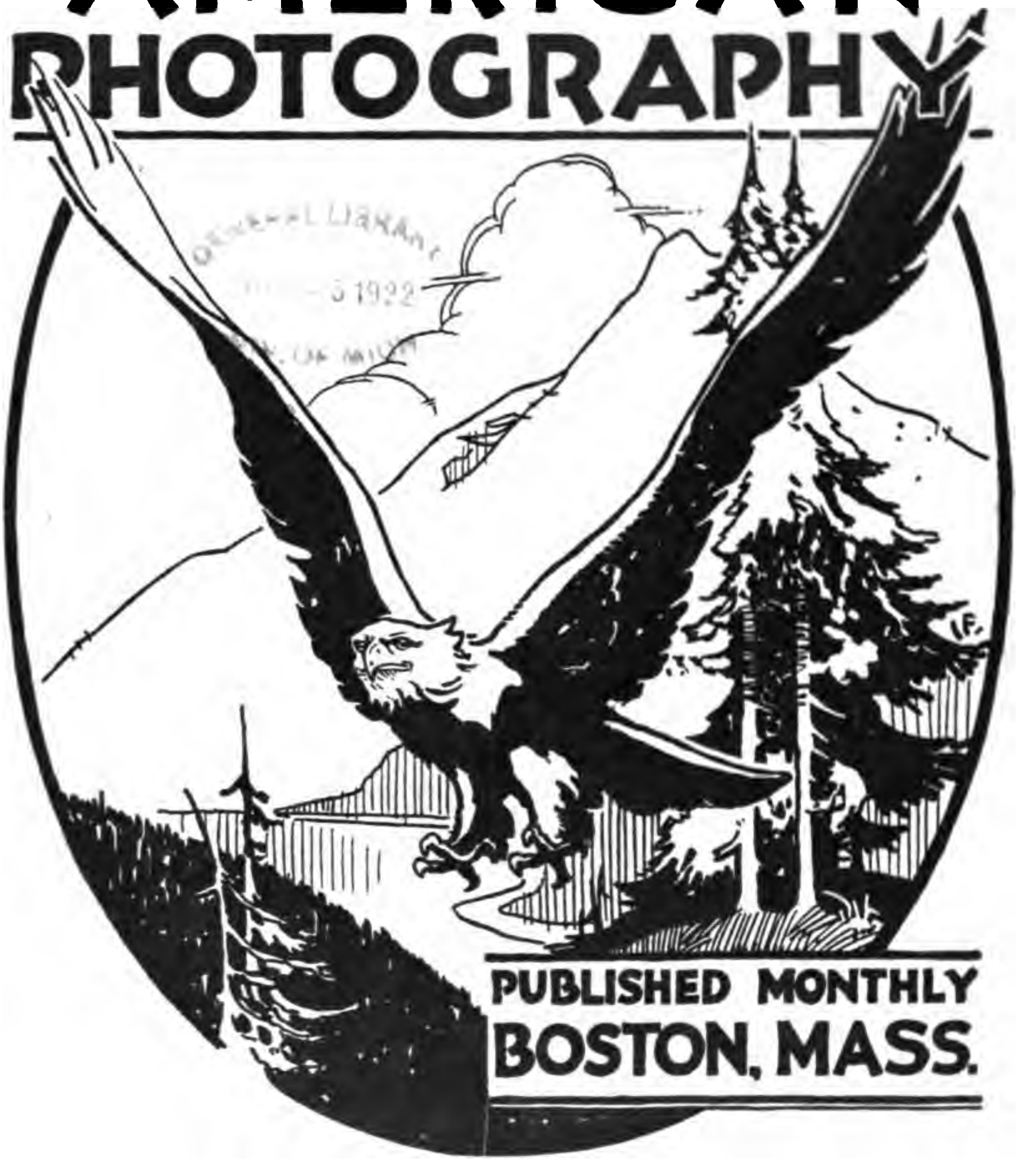
FORTHCOMING EXHIBITIONS

Place	Date	For information write to:
Royal Photographic Society Closing date for entries, August 25th, 1922	Sept. 18 to Oct. 28	The Secretary, Royal Photographic Society, 35 Russell Sq., London, W. C.
Frederick & Nelson	Nov. 6 to 18 inclusive	Frederick & Nelson, Seattle, Wash.
London Salon of Photography Latest date for entries, August 30th, 1922	Sept. 9 to Oct. 7	Hon. Secretary, London Salon of Photography 5A Pall Mall East, London, S. W.

JULY 1922 25 CENTS

JUL 5 1922

AMERICAN PHOTOGRAPHY



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[illegible] remonstrance [illegible] like to know [illegible] certain [illegible] establishments? [illegible] print, would [illegible] to say [illegible] make a twenty [illegible] inch print? [illegible] enlargement from an eight [illegible] tive is no more absurd than [illegible] from a vest-pocket film. [illegible] advantage of the [illegible] consists upon [illegible] Put it this way: hang a small [illegible] side by side on a wall and the [illegible] one will attract more attention and [illegible] more comment from an average collection of viewers than the small one [illegible] esthetically a trifle inferior.

It is solely for this reason that projected prints of large size are used so extensively for advertising theatrical productions. Whatever we may think of them from an artistic standpoint, there is no denying that the huge prints, some with figures more than life size, ornately framed and gayly colored, fulfill most effectively the object for which they have been placed in the theatre lobby. They are insistent and impressive. The pictorialist who values these two qualities: who wishes his work to "pull" and to "stick," will do well to enlarge the bounds of his picture-space. The careful attention he can give to compositional and technical details, seldom apparent in or practicable with the commercial enlargements, will, in his large pictorial print, be most evident and satisfying.

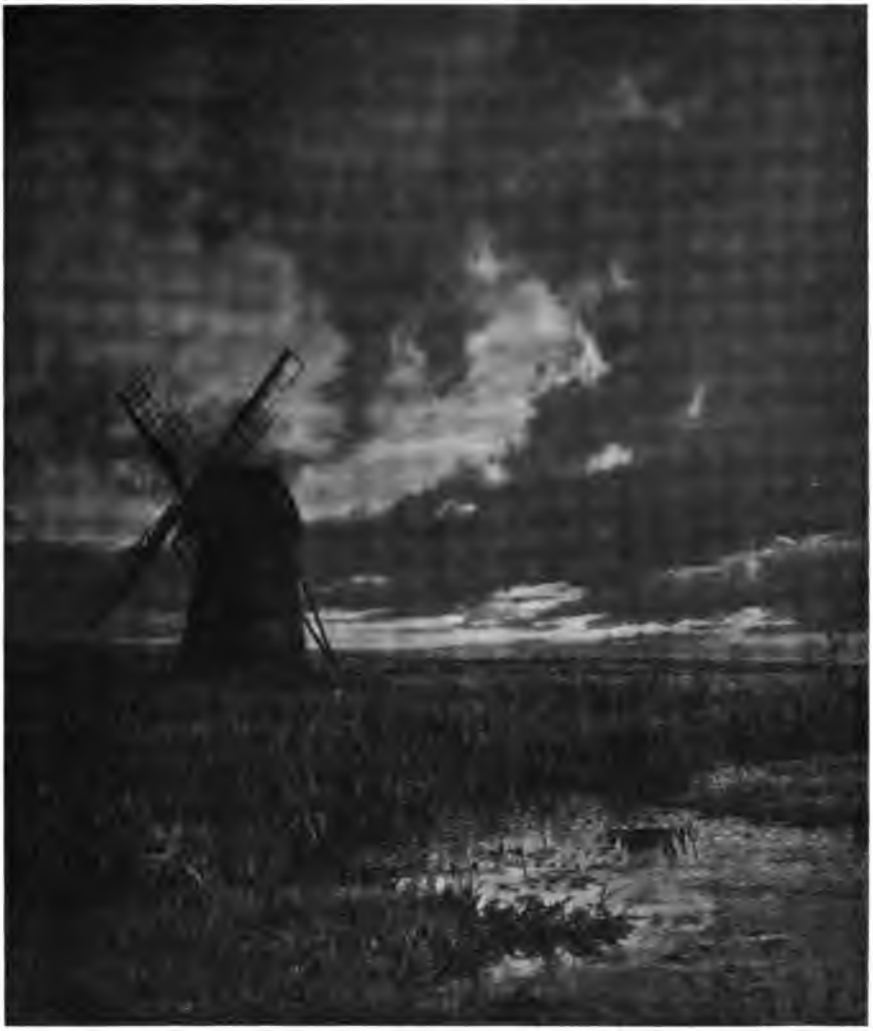
Manifestly, the ordinary methods of enlarging, while remaining the same in principle, must be changed considerably in the details of manipulation before they can be suited to the quick and facile production of commercial enlargements in the sizes mentioned. All the apparatus, of course, must be of size proportionate to the prints to be made, and is indeed, most often specially constructed of extra heavy material. Makeshifts will not stand the gaff.

Photographic materials, too, are different from the ordinary run of things. Sensitive paper is puchased in rolls forty inches wide and ten yards in length — the piece twelve by fifteen inches which is used to test the exposure is a mere snippet. Developer is mixed in a twenty-gallon crock, while the hypo tray devours a keg of pea crystals at a clip. The tanks which contain the solutions are twice the size of the ordinary bath-tub, barring the depth.

Of all the methods available to secure an enlarged image on the paper, the most practical and therefore the universally used combination for this sort of work is that of a camera and easel installed in a room from which the unwanted light can be effectually excluded. Generally the position of the camera and illuminant is fixed and immovable, distance adjustments being made by sliding the easel to and fro either on an overhead trolly system or on tracks fastened to the floor. Of the two, the overhead system is to be preferred, for it works more freely and eaves the floor unencumbered. The easel should measure at least four feet in width, and as ordinarily constructed is made two-ply to prevent warping out of shape, of rather soft wood, to permit easy driving of push-pins, close-jointed and bound in an angle-iron frame, the whole securely braced with strap-iron struts to keep it running smooth and true. For convenience the sizes of prints to be made are outlined in black paint on the easel, centered axially with the axis of the lens, any required degree of enlargement being thus quickly and easily determined from the operator's position at the focusing knob of the camera.

An important part of the camera is the negative carrier. It is provided with a full set of kits to hold anything up to an eight by ten plate, and should slide in its slot snugly, with a minimum of leakage of light. An arrangement whereby that part of the carrier containing the kits revolves under the action of a pinion engaging a curved rack is very convenient, enabling one to square upright lines not parallel with the negative edge with the black marks on the easel. For the ordinary run of work, anything in the way of a swing adjustment is superfluous, since this means a corresponding swing for the easel, which is often difficult if not impossible. Generally it is simpler to make a new negative, with lines all square, undistorted, and unspoiled by convergence or perspective effect Very often, too, the light and shade can be equalized to some extent if a new negative be made, and thus a good deal of otherwise necessary dodging of the negative while printing may be eliminated.

Enlarging cameras may, of course, be purchased, and they have a better appearance,



A DESERTED MILL
JOHN M. WHITEHEAD
Honorable Mention, Second Annual Competition

doubtless, than the home-made variety: these latter, however, can turn out prints just as good in every respect. A bellows length of double the focus of the lens to be used is necessary, as is also a front permitting ample rise and fall of the lens. A large focusing knob for quick action, with an auxiliary cam or micrometer device for the finer focusing, should be a part of the ideal outfit. These constitute the essentials; refinements, if they are added, should be such as will endure the rough usage the camera is bound to receive.

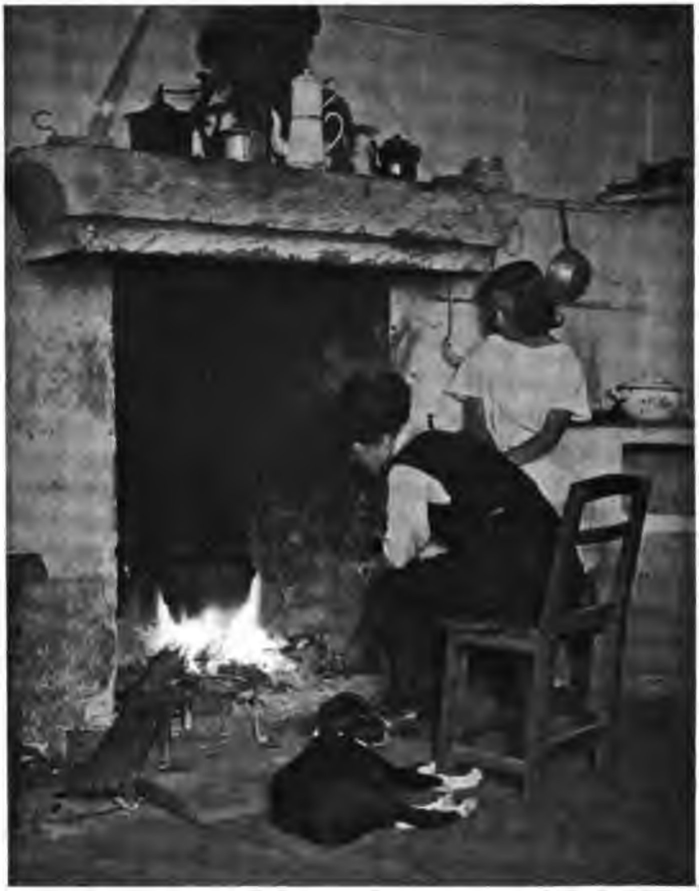
For preference an anastigmat lens should be used on the camera front. One which works at a speed of f:6.3 is excellent: biting definition and microscopic detail are desired, as a rule, and these slower cemented anastigmats are usually better corrected over a larger field. The focal length most suitable will range from nine and a half to ten and a half inches, making certain that the lens covers the eight by ten plate perfectly when the rising front is brought into play. This focal length will not unduly stretch the capacity of either the camera bellows or the enlarging room. One accessory is important: an orange cap should be obtained to fit over the front combination of the lens, to permit of adjusting the paper to the dimly-seen filtered image on the easel

A convenient way to arrange the enlarging room is to push the camera, the base of which should be about 3′ 6″ from the floor, up to the end wall of the room, cutting a hole in the partition through which the light is enabled to reach the negative. The light is placed on the outside of the room, no special precautions being needed to shield it. This method has the advantage of securing better ventilation in the darkroom itself, as well as aiding to keep the lamp cool, a difficult problem if it is enclosed in a metal housing

The best light for enlarging is the electric arc. It has disadvantages, it is true; occasionally it flickers and sometimes goes out in the middle of the exposure: it must be trimmed, which is a nuisance: notwithstanding, it is to be preferred, if available, to any other light, for this sort of work. It is generally used with a pair of condensers, and a single sheet of ground glass, the whole representing a goodly initial investment. Incidentally, the ground glass should not be placed between the condensers, since better results are had by using it between the condensers and the light, separated from the former by a two inch air space.

The negative to be used for enlarging to extra sizes should have an appreciable increase of contrast over those generally considered suitable for projected prints: it is ordinarily recommended to use rather a soft negative for bromide enlarging. A piece of motion picture positive film, for instance, when projected to its normal size on the screen, may not look contrasty at all: yet if you try to make an eight by ten negative from it, it is necessary to overexpose a great deal and shorten development time considerably, to get over the excessive density of the lights: excessive, that is, for the small magnification it is subjected to. The good enlarging negative should be clear and unfogged, and the strength of the highlights adjusted according to the illuminant employed. Naturally a slightly softer negative is permitted when mercury vapor light is used. All in all, the best quality is that obtained when a correctly timed negative of the Seed 30 or Portrait Film type is developed in unrestrained pyro containing twice as much sodium sulphite (the preservative) as there is developing agent. A similar quality is obtained on slower emulsions such as the Stanley Commercial with the metol-hydrochinon developer.

With the negative in position, film side facing the lens, the image is thrown on the easel of a size to correspond with the distance separating the latter from the lens. The picture is first roughly brought to the size required, and sharply focused on a sheet of white paper held in the hand or fastened to the easel with a few push-pins. The grain of the negative is usually apparent enough to focus by — if not, a small pinhole should be found



BY FLASHLIGHT
C. CHARLES
Honorable Mention, Second Annual Competition

print through judicious dodging.

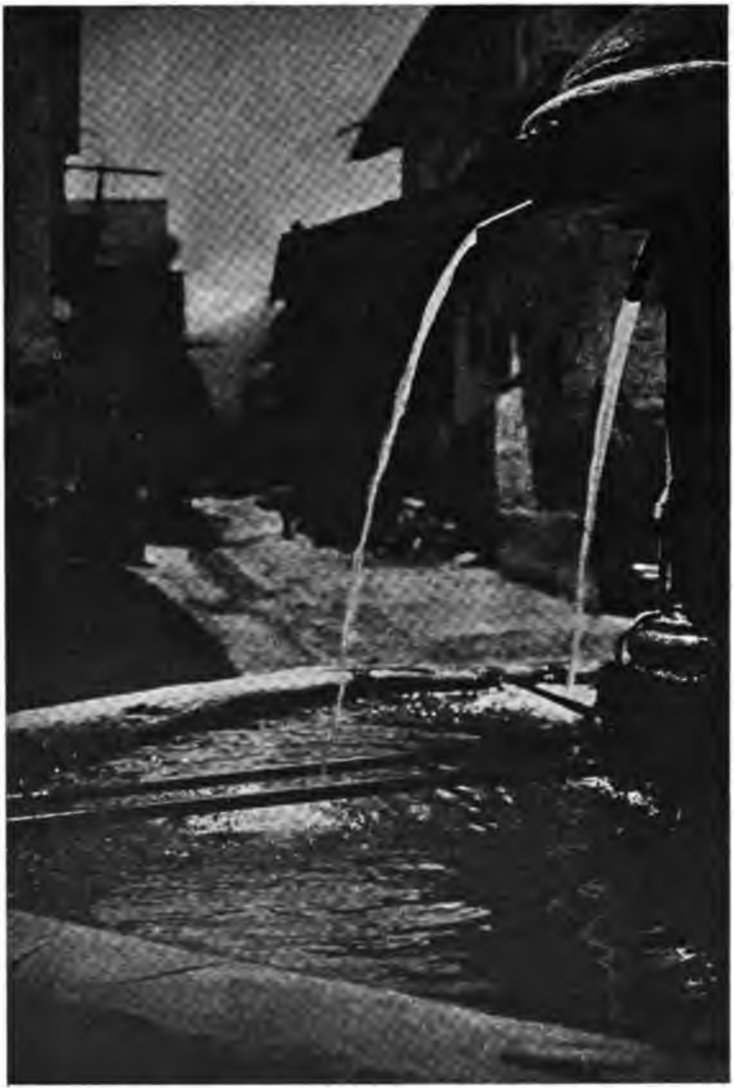
The lens being recapped at the end of the exposure and the illuminant extinguished, the task of developing the flat sheet, with its penchant for assuming cylindrical form, confronts the operator. If improperly done, the print will be unevenly developed, torn, finger-marked, and otherwise unfitted for consumption, except by the waste barrel; properly done, it becomes astonishingly simple — almost easy. In fact, description of the method is more difficult for me than carrying out the process would be. The caution must be given to wear old clothes when tackling the development: remain coatless and with shirt-sleeves well above the elbow, and don an ample apron for further protection. An expert enlarger splashes everything in the room with developer in his onslaught on the print.

The paper has a tendency to curl always in the one direction. It will not lie flat in the solution until thoroughly soaked. Whenever possible, therefore, the paper should be rolled up, after exposure, "against the grain," or at right angles to the curling tendency, if so abstract yet so definite a thing may be thus surveyed. At any rate, a roll about four inches in diameter, emulsion side inwards, should be made of the exposed paper, with a free end about six inches long extending. The roll is loosely held in the left hand, the free end grasped tightly in the right, and the whole quickly, easily, yet without haste is slid into the developer. The right hand immediately gives a strong pull, and the paper unrolls from the slightly resisting left hand, under the surface of the solution, permitting the developer to gain access to all parts of the print. There will be attempts to curl, of course, and air-bells to be broken, but all such are quickly discouraged by the liberal splashing of developer over the affected parts. Continuous movement of the flat of both hands over the entire surface of the print serves to keep the developer in motion, as well as the operator occupied

At this critical juncture let us pause for a moment to consider the most suitable developer to use. For ordinary bromide printing, there are two favorites, amidol and metol-hydrochinon. The peculiar conditions under which most of this enlarging is done tip the balances in favor of strong M. Q., which does more work, does it quicker, and does it, moreover, over a longer stretch of time. The fact that M. Q. will keep in stock solution as well as dilute in the tank is a prime reason for its universal employment. It is used more concentrated than usual, since it thus works faster and with more snap.

When, as a result of the combined splashing and laying on of hands, the image has made its appearance and gradually grown to the desired depth, the sheet of paper, now limp, tractable, and tearable, is grasped by the two nearest corners, raised with care, drained, and transferred with celerity direct to the hypo tank, ranged alongside, where a fresh bath of acid hypo, with plenty of hardener of the customary sulphite-alum-acetic acid type, waits to receive it. The fixing solution is freely splashed on the print, quickly distributed by rubbing, all done with speed to neutralize the developer and prevent stains and dark patches. The usual intermediate rinse is omitted because of the likelihood that these will occur: necessarily, the hypo bath does not keep active and workable as when smaller prints are rinsed beforehand, because of the appreciable quantity of developer carried over by each enlargement. The hypo is generally made up every two days, and is considered exhausted when it becomes frothy or discolored. The individual can decide for himself whether this is good photographic practice or not — I simply state the facts.

After a soak in the hypo which varies in extent with the amount of time at the operator's disposal, the prints are transferred one by one to the washing tank where a series of streams of water from perforated pipe along one or both ends is permitted to



THE FOUNTAIN
STEFANO BRICARELLI
Honorable Mention, Second Annual Competition

play upon them. I think it was Sir William Abney who recommended in his "Instruction in Photography," a book published some thirty years ago, that prints be washed eight hours in running water to free them from hypo. Later investigations may have demonstrated that this amount of washing, though not harmful, is slightly in excess of that actually required: be that as it may, the most ardent advocate of shortened washing would raise hands in horror at the perfunctory rinse which a good many enlargements of the type we describe are subjected to as a final hypo-eliminator. Needless to say, efficient washing of large prints is every whit are desirable as in the case of small ones — they are just as liable to staining and fading. Should any one reading these jottings feel impelled to the manufacture of "big 'uns," he is urged not to skimp the fixing and washing: the influence these two operations exert on the final result, although it may not be immediately perceptible, nevertheless in the course of time makes itself felt either by the presence or absence of the picture over which so much time and labor was expended. With commercial enlargements this does not matter so much, as the print has probably been delivered and paid for, but the pictorialist cannot risk reputation as a technician for the sake of a few moments of his time.

The washed print, if dried in the usual way, would curl unmanageably. You who have attemped to straighten an eleven by fourteen enlargement on certain of the single weight bromides know what a job it is to get it to lie flat, and can appreciate the impossibility of handling large sizes thus in any quantity. As a consequence, these enlargements which, except the smaller sizes up to 20 x 24, are all made on double weight stock, are all mounted solid.

Heavy cardboard, three-sixteenths to a quarter of an inch in thickness, is used. Beaver board may be employed, and generally is when extra large prints are worked. The cardboard is just a trifle thinner than the Beaver board, and is built up of a considerable number of plies. As the prints are mounted wet with starch or flour paste, something must be done to keep the mounts from cockling and curling. The remedy is usually a piece of wrapping paper cut slightly smaller than the mount, and pasted to it just previous to applying the enlargement to the other side, when the two in drying contract similarly and thus keep the cardboard in such shape that it can be flattened readily.

But to take the steps in their proper sequence: the prints are brought out dripping wet from the washing tank and laid face down on a zinc-covered table. The backing strips are next well soaked in water and laid over the prints. With a flat squeegee a foot in length the operator presses out all the surplus water, leaving the surface of prints and backings almost dry to the touch. A four-inch rubberset bristle brush is used to apply the paste. This is made simply enough by adding banana flour, Stek-O, or some other of the patented preparations to a jar of cold water and stirring vigorously with a short stick or dowel. When very stiff and thick, it is ready for use. The paste is thoroughly rubbed into the backing strip, particular attention being paid to the edges, and the paper is then lifted by two corners and applied to the back of the mount, which has been disposed on edge before the mounting-counter. It is touched lightly near the upper corners to hold it in place, the mount swung up on the counter, and the paper thoroughly squeegeed down. The mount is then stood up again.

It must be explained that the mount is the exact size of the finished enlargements, and the print is made on a sheet of paper allowing a liberal margin (say an inch) all around. A thirty by forty print will thus be made on paper about thirty-two inches by forty-one, which is the actual width of the roll. The print having been pasted thoroughly, and gone over for lumps which would detract from the appearance of the finished product, is set into

DAWN H. F. ALMY

position on the mount, disregarding the overlapping edges, and squeegeed into place with the flat squeegee. The surplus paper is trimmed off by using an old glass negative as a trimmer, working it against the edge of the mount while the print is still wet and pliable. This done, it is gone over again with the squeegee, and put away flat and face up to dry. Drying can be hastened with an electric fan, but the corners are apt to dry first and pull up, taking the first few plies of mount with them. On the whole, spontaneous drying is to be preferred.

Although the print is, strictly speaking, finished when dry, it is rarely sent out in that "as-is" condition. Commercial enlargements are always subjected to a certain amount of working up, either in black and white or in color. Many and obvious defects may be eliminated by the simple process of "giving it the air," as working up by means of the air-brush is known. A good deal can be done by crayon sauce and stump, or even with spotting brush and color: the correct time to stop is when the photograph is in danger of ceasing to be a photograph and apt to resolve itself into a drawing with a photographic basis. The working-up of photographs, however, is a profession in itself, and in the limited space remaining cannot be more than touched upon. Colored enlargements are made with transparent water-colors, usually, applied with the air brush: here the element of knowledge of color harmony and contrast enters When the tints have been applied, a few impasto touches of white oil color are applied to give brilliance, and the whole put away to dry. For prints which are to be exposed to the weather, a coat of Valspar varnish is desirable as a finishing touch.

If the thought of making large prints is still discouraging, let it be said that I have known one man, unaided save for the services of a lad to help him with his mounting, to turn out not less than sixty prints thirty or forty inches, eight prints forty by sixty inches, a special sized print necessitating two exposures, and a number of twenty-thirties, eleven-fourteens, eight-ten reversed prints and other small fry, all from assorted negatives and all in the course of an ordinary working day, with its attendant chemical-mixing, 'phone-answering, soldiering and what-not. And he is somewhat under average height and weight and was in none too good physical trim at the time.

It is not to be expected that enlargements of this size will become common enough to cease to attract attention: the difficulties of their production will keep away from the process the dilettante small worker — yet all this should be only an incentive to the serious worker in artistic photography: a means by which, if not inexpensive yet efficient, he can make his productions stand out from the rank and file.

PHOTOGRAPHING EXHIBITION FOWLS

A. R. BROWN

THE growing interest in the breeding and exhibition of standard bred poultry has opened up a field for the careful amateur photographer to cultivate. Large sums of money running into four figures have been paid for individual specimens and the selling of these birds by the specialty breeder is on a basis today where the man with the best knowledge of advertising reaps the greatest financial rewards. The prospect is reached generally by the use of photographs of the birds, reproduced in poultry journals or circulars. The business is almost entirely a mail order one and birds are shipped all over the world. To assist readers of American Photography, I will describe my method of photographing fowl.

An accurate knowledge of the breed characteristics is essential. Each breed has a distinctive shape which the expert can tell at a glance, and the beginner must educate himself so that he can distinguish these details. A study of the winning birds at the larger shows should be made, and "The American Standard of Perfection," which can be obtained from almost any bookseller and which contains "ideal" drawings of all breeds, should be the photographer's text book. Almost any kind of an outfit will do the work, but it must have a focusing screen. Photograph No. 1 was made with a 4 x 5 Century camera fitted with a rectilinear lens. The bird was placed on an upended barrel in the shade of a house with an old window shade for a background, in August at about 3 P. M. The camera was focused so that the entire head of the barrel would be reasonably sharp, with the microscopically sharp point in the center. The shutter was closed (don't forget to close the shutter!) and set for "bulb." When the slide is drawn, to avoid the possibility of a light-struck plate, I always cover the camera with a focusing cloth.

My own method is to prepare everything, as above, before touching the bird at all. Some birds are much more nervous than others and therefore the less they are handled, the less fussing you will have with them. A profile outline is usually what is required in this class of work, so place the subject at right angles to your lens. A gentle massage of the bird's neck and between the wattles always seems to be appreciated, and by slowly

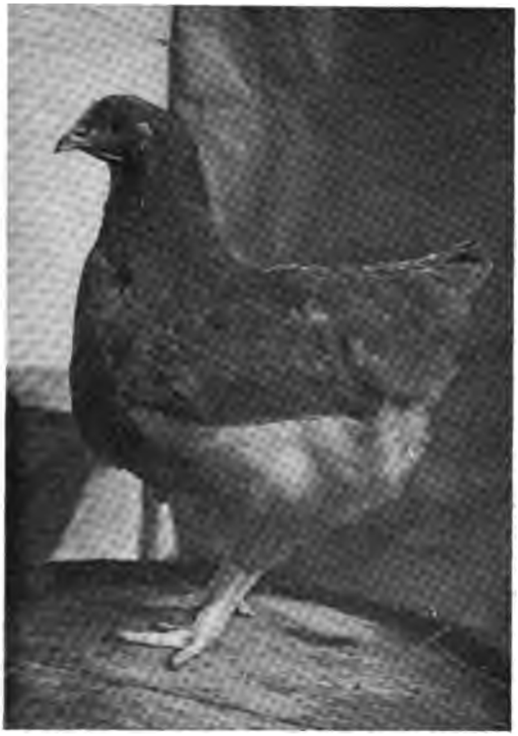


Figure 1

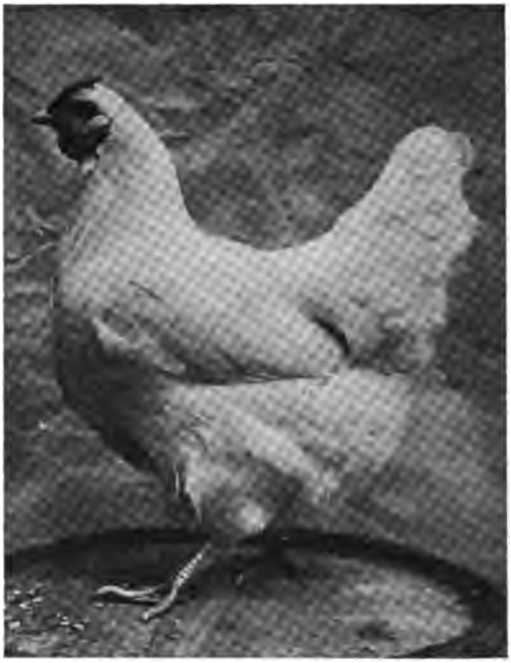


Figure 2

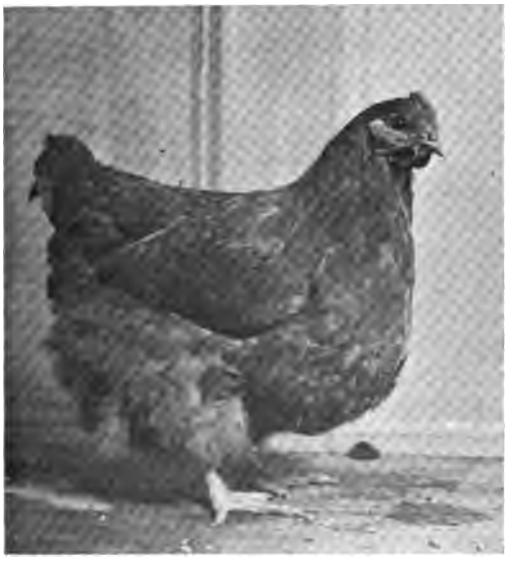


Figure 3

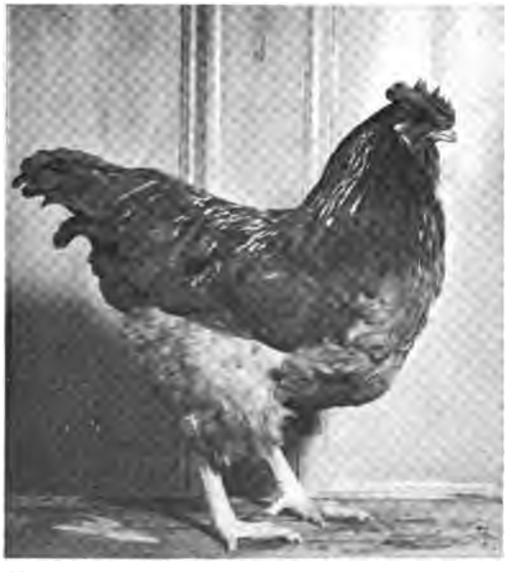


Figure 4

AN ADVERTISING POSTCARD A. R. BROWN

drawing the index finger under and away from the beak the bird's attention can generally be held long enough to secure an exposure with the shutter set on "bulb." A quick pressure and release, probably about 1-5th second, has always been ample with me to get a negative which will make good prints on soft paper. Such paper I have found to be the best kind to use to show feather detail, so time your exposures amply. My reason for recommending the "bulb" exposure is that with the shutter set in this way, you have more leeway and if the bird is of a color or combination of colors that requires the limit of exposure, you are, after a little practice, able to hold the bird's attention so that it is absolutely motionless and can give a considerable exposure, releasing the pressure on the bulb at the least sign of movement. Probably this will be a good place to advise having ample length of tubing fitted to the shutter. I prefer a bulb and tube to operate the shutter for this work, as it is necessary to have enough release length to be able to reach your bird with one hand and, at the same time, to be out of the lens field which, however, will not be great, owing to the close range of the camera. Picture No. 2 was made with the same camera, data same as No. 1.

I do considerable work in the winter by the use of flashlight. The birds are placed on a box, table or anything handy and some kind of background is improvised, depending on the color of the bird. Bear in mind when selecting the background, that the comb and wattles of most birds are red and will photograph very dark, so it is a good plan to pose the bird so that these appendages have a little lighter background to show them off to advantage.

For flashlight work I use a Caywood Pistol with a small amount of any of the standard flash powders; a half teaspoonful usually is enough for an aperture of *f*:8 or faster. In flashlight work the birds may be placed directly on the object on which they are to be photographed and, by the aid of a dim light, focusing is simple. I use cap exposures entirely for flash work, get the camera set, slide drawn, camera covered with focusing cloth, as the least leak in holder or bellows means a light-struck negative. With the bird in position, flash pistol in one hand, lens-cap may be removed and the flash "gets" your bird in the exact pose you desire. Prints No. 3 and 4 were made from negatives on Eastman Portrait Film, powder and methods as described. All negatives were developed with

WET DAY PAVEMENTS ELEANOR L. SMITH

Third Prize, November Senior Competition

pyro-soda. The lens used for No. 3 and 4 was a Wollensak Vinco at *f*:8. Prints are on Professional Cyko.

The plumage of a male bird is more glossy than that of the female. In print No. 4 there are flash reflections showing along the neck and back. These might have been avoided by a different arrangement of the lighting. The chickens shown on the postcard were photographed in the manner described for prints No. 3 and 4, on Portrait Film, and the white lettering was obtained by printing in black ink on the gelatine side of the film. This form of advertising is very effective and many attractive schemes might easily be devised. A picture like this would make an appropriate card for Easter greetings.

Now for a few "don'ts." Don't expect to sell a breeder photographs of his birds unless you have studied the breed and know which points to bring out. A breeder may tell you all about it, but unless you know the precise moment to "shoot," you will make few sales. Don't get out of patience if "biddie" does not pose right away; hens are the most "know-nothin' " things in the world. Don't be a hen Move slowly; quick movments or noise will rattle nearly all hens, however well trained they may be. Don't forget to keep your flash behind the lens, and do not have it too high; a little to the right and about level with the height of the bird is my favorite method. Birds that require long legs should be placed slightly above the camera level; squatty or blocky birds generally show best if photographed slightly below the lens level.

There is a fine opportunity for a capable photographer of poultry to do considerable work. The technical part is simple; merely such as any capable amateur can do. The difficult part, the part that will spell either success or disaster, is the ability to study ideal drawings of ideal birds, to carry these in mind and seize the moment for exposure when your subject assumes a pose nearest to this ideal. There is the story. Now you photographers "go to it," and if the editor will only publish the results we will surely have some hen show.

THE BROMIDE POWDER PROCESS

E. J. WALL, F.C.S., F.R.P.S.

A NEW process has been suggested, in which the gelatine of a bromide print is rendered tacky, so that powder will adhere to the same. The results are said to have an extremely pleasing texture.

How to obtain the desired result is certainly an interesting question, which might be attacked from various angles. The problem is to so affect the gelatine *in situ* with the silver image that it shall become receptive of a powder, as in the old powder process. In this bichromated colloids, usually honey and sugar, were exposed under a positive and those parts affected by light lost their tackiness and became hardened, while the protected parts remained the same, so that when dusted with a fine powder this adhered and gave the image.

In the present problem, however, we have already a positive image, imbedded in more or less gelatine, and this has to be attacked, and at the same time, presumably the image must not be affected. Were it not for this latter clause it would not be such a difficult matter. Naturally one's mind turns to those processes in which metallic silver has played the part of light. As Howard Farmer pointed out in 1889, finely divided silver imbedded in gelatine can actually do the work of light in the presence of a bichromate so as to render the gelatine insoluble in hot water. This is the reverse action to what we require, but is presumptive evidence that we ought to be able to find some chemical reaction, which should enable the silver to soften the gelatine with which it is in contact.

Other methods were used in the old powder process in which the hardening action was not employed. Poitevin in 1860 discovered a process, later embodied in his *English Patent* 586, 1863, in which he used ferric chloride, tartaric acid and gum arabic. This mixture was coated on glass and dried, and in drying became insoluble in water. On exposure to light, however, its solubility was restored, it became tacky, and fine powder adhered to the light-affected parts. This is obviously a very strong lead for us. Confirmation of the applicability of such a process to our problem is furnished by a patent (*U. S. Patent* 1,315,464, 1919) taken out by Mr. J. G. Capstaff, of the Kodak Research laboratory, in

THE CORNER KENNETH D. SMITH

First Prize, May Senior Competition

which he utilizes the action of metallic silver, when treated with the above-mentioned mixture, of softening gelatine, so that it becomes more receptive of dyes than the gelatine where there was no silver. Actually this patent is a modification of the Kodachrome, the well known two-color process.

The solution used by Poitevin (*Bull. Soc. franc. Phot.*, 1860, **7**, 147, 304) was:

Ferric chloride	100 g	768 gr.
Tartaric acid	30 g	230 gr.
Water	1000 ccm	16 oz.

The same ratios were advised by Capstaff for use with the silver image. In all probability the action here is the formation of a ferrous salt, and at the same time silver chloride is formed. As this last salt is white, it is obvious that a bromide print treated with such a mixture, even though much diluted, would be bleached. Presumably one could redevelop this bleached image without destroying the tackiness, but this would give another step, which one ought to avoid if possible.

If the mere formation of a ferrous salt were the cause of the softening of the gelatine, one has a wide choice in the iron salts, as all the ferric salts are readily reduced to the ferrous state, so that one could use ammonio-ferric citrate, the oxalate and the alkaline ferric oxalates. But in all cases there would presumably be action on the silver image, which is to be avoided. Besides that, there is great danger of basic iron salts being precipitated in the gelatine and paper with consequent staining.

Turning to other possibilities, there are certain salts which are in themselves solvents of gelatine, such as the alkaline hypochlorites, barium chloride and chloral hydrate. The first is used in the old Debenham reducer. Barium chloride was suggested by Lumière for the development of carbon prints, and chloral hydrate has been used to make gelatine soluble in the gum-brochrimate process. The alkaline sulphocyanides have also a softening action on gelatine. Whether any of these would have any selective action in the presence of metallic silver is a matter of experiment. In the case of the hypochlorites one might have the image attacked, but it is well worth trial, as it is well known that a very small addition of cobaltic hydroxide to a hypochlorite sets free oxygen, and as will be seen directly, this is one of the most effective agents.

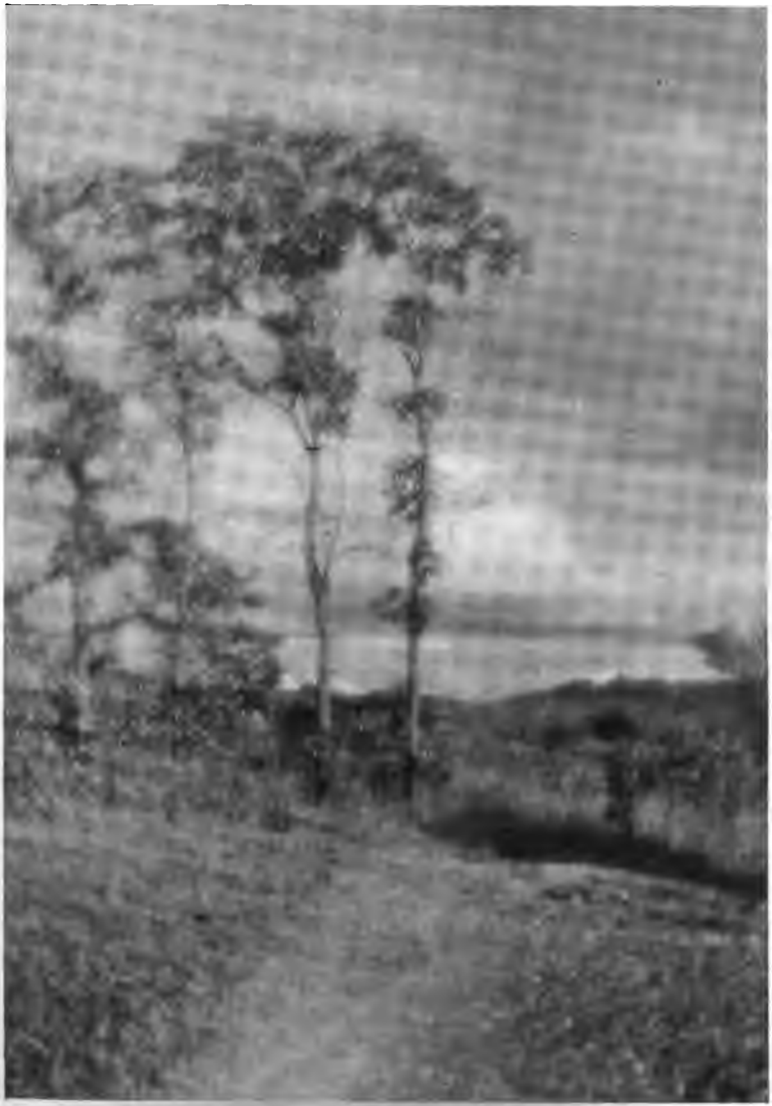
The ideal process would be one in which the silver image exerts a purely catalytic action, that is to say, gives rise to a chemical reaction without itself being attacked. And we have here fortunately the most promising lead yet.

R. E. Liesegang (*Phot. Archiv*, 1897, **39**, 161) found that ammonium persulphate would act on gelatine, in which finely divided silver was imbedded, so that it became soluble in warm water, but the image was bleached. The bleaching action was undoubtedly due to the formation of silver sulphate, as he used an old and consequently acid solution, and this action is the basis of the persulphate reduction process. Whether a persulphate solution, rendered alkaline with ammonia, would cause softening of the gelatine without attacking the image is very doubtful, but it is worth trying.

Starting from Liesegang's experiments, Andresen (*D. R. Patent*, 103,516, 1898) found that hydrogen peroxide acted in the same way, and he actually used commercial hydrogen peroxide solution, which contains 3 per cent of peroxide, with the addition of 2 per cent of hydrochloric acid. In 5 minutes the dense parts of the image began to dissolve, and in 20 minutes a good relief was obtained. It is obvious, therefore, that if such a solution be diluted and allowed to act for a short time on a bromide print there must be softening of the gelatine.

In 1910 I made a long series of experiments with this process in the hope of obtaining colorless relief images for color photography, but the work was temporarily abandoned. In the mean time Belin and Drouillard (*Fr. Pat.* 423,150, 1910) patented the formation of a relief by using a mixture of cupric sulphate, nitric acid and bromide. The argument for the composition of this mixture given by these patentees is based on the fact that the action of the peroxide varies with the temperature, the gelatine being naturally more readily dissolved at higher temperatures. They state: "This rise in temperature may be induced in the molecule itself and by the oxidation of the silver imbedded in the gelatine. It is evident that an oxidizing agent, or a reagent creating a rise in temperature of the exothermic reaction would enable one to control the attack, so that the points of greater opacity shall be attacked before the less opaque regions."

Lüppo-Cramer (*Phot. Korr.*, 1911, **48**, 466,608) examined this question and called attention to the fact that *the silver itself was not attacked when hydrogen peroxide alone was used*, and that the addition of halides considerably hastened the action. The silver acted catalytically and oxygen in a highly disperse form was set free and the gelatine rapidly attacked and rendered soluble. The catalytic action of the silver is adversely



TREES AND CLOUDS

J. H. FIELD

Second Prize, May Senior Competition

influenced if the silver goes into solution, and this is prevented by the presence of halogen ions, which thus indirectly assist the velocity of the catalytic liquefaction of gelatine.

A few experiments carried out on the above lines at once proved that the line of r soning was sound. At first nothing but failures were met with, but the reason w soon apparent, for a series of commercial prints had been used, which presumably h been fixed in a chrome alum or alum fixing bath. Tests with freshly made prints, so fixed in a chrome fixing bath and others in plain hypo, at once showed that the latt treatment gave the better results. It was also thus found that dried prints did not gi such good results as those that were transferred direct from the washing water to th peroxide. Whether this last procedure is actually essential, there has not been time t decide.

Some of the prints tried were more than ten years old and their life history was no known. But finally it was found that by prolonged washing, say five hours, even the oldes prints, as well as those that were fixed in the chrome hypo bath, were rendered amenabl to treatment.

Plain peroxide solution does not act so well as one containing an acid. Hydrochloric acid was abandoned and nitric adopted, with the addition of a little bromide, and finally the following was found suitable:

Cupric sulphate	5 g	38 gr.
Nitric acid	6 ccm	45 minims
Potassium bromide	.0.5 g	4 gr.
Hydrogen peroxide	100 ccm	1 $^{3}/_{5}$ oz.
Water to	1000 ccm	16 oz.

Temperature 21° C. (70° F.). The duration of the action seems to differ considerably, varying from 5 to 20 minutes, but this is probably dependent on the make of paper. In one case a paper was found that required 45 minutes, but as this was of German make and some years old it can be ignored.

In the above bath it will be seen that the ratio of the acid is small and that of the bromide smaller still; the quantity of cupric bromide formed must also be very small, 0.47 g., still this hastens the action and prevents the silver dissolving. That one need not fear any bleaching action of the image has been proved from a series of experiments extending over many months in the formation of reliefs by this process for color photography. The gelatine dissolves and carries with it the black silver image and it is not until the solution has stood for some little time that the white silver bromide is formed and settles down.

The above formula is not put forward as definitive, nor even as the best, but it will at least serve as a starting point for those who may like to experiment.

As regards the powdering of the images, one has merely to revert to the methods of the old powder process, and as fine a powder as possible should be used. Any inert powder, colored or black, can be used, and unless one wanted to follow some of the control polychromatic processes and obtain colored effects, black will be used. The method of applying the powder in the old days was either to use a very soft brush, charged with the powder, and work over the surface, or a little sieve was made from a lidless and bottomless pill box, the rim lid forming a clamping ring for a piece of the finest muslin. Some of the powder was placed in the box and the sides tapped, while held over the surface to be powdered, and then the brush was used. The purpose of the sieve was merely to hold back any larger grains or clumps of the powder.

Any of the dry color powders, as sold by artists colormen for water-color painting are

REFLECTIONS LOUIS FLECKENSTEIN

Pittsburgh Salon, 1922

suitable, and probably ivory black with if necessary, a very small addition of burnt umber or ultramarine to match the color of the silver image, would be the best. The umber gives a brownish tinge and the ultramarine a blue-black tone.

As regards the most suitable bromide paper, one may assume that those with more gelatine such as the glossy papers will give the best results, but probably these would be objected to by some, and, therefore, the semi-gloss papers, velvet and the like, would have to be used. The real matt papers are likely to be the least suitable, as they owe their mattness to the addition of starch or other substances, with which it is not probable that tackiness can be induced.

A HOMEMADE CARRIER FOR THE KODAK ENLARGING OUTFIT

M. W. COOKE

SOME months ago, having made a number of negatives which appeared worthy of enlarging, I decided to add an enlarging apparatus to my equipment, as my camera — a 3A Graflex with non-removable hinged back — was not adapted for daylight enlarging. The final choice fell on the Kodak Enlarging Outfit, and with it I made a number of satisfactory prints; but, after operating the outfit for some time, I began to feel that in some points it was capable of improvement, and after some deliberation, I designed and constructed the carrier here described.

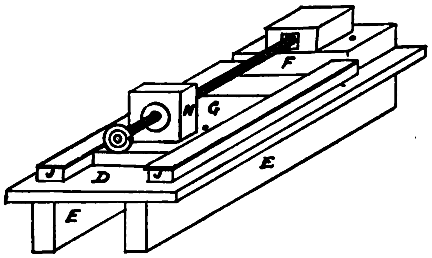
The principal deficiency of the outfit in its original form is the total lack of facility for adjusting the camera with the negative in a plane parallel to that of the easel, and once adjusted, keeping it so. The focusing arrangement, consisting of sliding tubes locked by a thumbscrew, is also somewhat crude, and in focusing one is almost certain, while watching the image on the easel, to throw the camera out of alignment, when the process of adjusting the camera and focusing has to be commenced again. In making a number of enlargements from the same negative, the inconvenience is not so important, but a very appreciable amount of time may be wasted in an evening when only one or two prints are to be taken from each of a number of negatives.

Considering these points, it was evident that an arrangement was needed combining permanent alignment with easy motion to and from the easel, together with a more delicate focusing arrangement. A form of carrier solving the first problem was described in the May, 1921, issue of AMERICAN PHOTOGRAPHY, but this arrangement made no change in the method of focusing. The most obvious solution appeared to be in the form of a pair of rails, with a sliding carriage on which the camera would rest, the rear end of the camera being rigidly attached to the carriage and the front end movable, and it was in this form that the carrier was finally built.

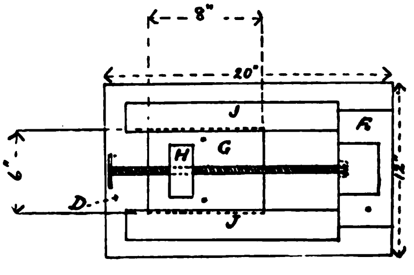
The rails consist of two pieces AA, 1½" x 3½" x 4'0", joined in parallel position by cross-pieces BBB at the ends and bottom, a board not shown in the plan being attached to one end on which the easel is clamped. It would be equally effective to attach the easel directly to the rails, but, darkroom space being limited, it was in this case made removable. The easel must, of course, be accurately adjusted at right angles to the plane of projection.

The carriage consists of the bed D, 12" x 20", to which blocks EE are attached for its full length to slide with in the rails. At the rear of the bed, a block F is securely fastened, in which are holes to receive the legs of the camera. A movable bed G, 6" x 8", slides in guides JJ attached to the bed, and is drilled with holes for the front legs of the camera The dimensions given allow as much movement of the carriage as is required, and as much camera extension as the bellows allows

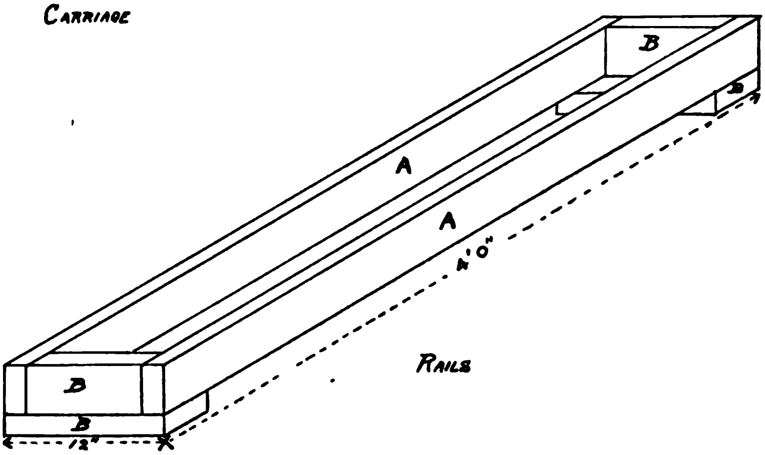
The woodwork of the carrier completed, it was necessary to find some method of controlling the extension Rack and pinion was naturally first considered, but was discarded owing to the length of travel required, and the difficulty of adjustment for an amateur mechanic The problem was solved by a double threaded screw 5/8" in diameter and 16" long, revolved by a small steam-valve wheel fitted to the front end, the other end



Carriage



Plan of Carriage



Rails

CARRIER FOR KODAK ENLARGER M. W. COOKE

being free to revolve in a plate attached to the rear block F. The screw passes through a threaded plate inset in block H attached to the sliding bed, so that when the screw is turned by means of the wheel, the block H travels along it, moving the sliding bed backward or forward as required. The screw was threaded to give ¾″ travel per revolution, which speed was found quite satisfactory for focusing, but might be varied as desired. The wheel at the front allows the operator to observe the image closely while focusing.

The apparatus described, with the exception of the screw and its two plates, may be easily and cheaply made at home or by any carpenter. Care must be taken, however, that all essential parts are accurately squared so that the camera may be at right angles to the easel at all points in its travel on the rails, and also that the sliding bed may work true in the guides. The screw must also be set parallel with the bed, and care is needed in drilling the holes for the camera legs so that it may rest level. The screw and its plates can be made by a machinist at small expense.

A further convenience may be easily added by marking corresponding scales on the guides and on the rails so that the apparatus may be set at once for any desired magnification, the various positions being readily obtained by experiment.

The substitution of the B & L Tessar Ic 5 x 7 lens with which most of my negatives were made for the R. R. lens supplied with the outfit was also found to be a great improvement, both in respect to ease of working and quality of results.

HANDY EXPOSURE TABLES FOR COLOR FILTERS

PHIL M. RILEY

IT has already been told in detail several times in these pages what a color filter is, what it does and how it does it. The particular advantages of its use in numerous special branches of photography, especially outdoor subjects, have frequently been emphasized. It is sufficient here merely to repeat that when this simple little yellow screen is placed over the lens, negative and prints are obtained which record color values more nearly in accordance with the relative brightness of nature's colors themselves.

By color values are meant recognizable and distinct degrees or steps of density in the negative and of greyness in the print. Without the color filter, blues and violets, which act strongly on the sensitive film, are rendered too light, while yellows, which act weakly on the sensitive film, are rendered too dark. The filter holds back the strong blue and violet rays, affording the weaker colors time to record. With the filter, blues and violets register darker than white, as they should; yellows register as light as they appear to the eye.

In actual work this means that in the print, blue sky is represented as a grey tone rather than white paper; that white clouds are outlined against a blue sky and have detail; that white apple blossoms and snow-clad trees stand out clearly against a darker blue sky; that mountains and other distant objects in blue haze register more clearly; that blue and violet flowers, dresses and other objects are grey rather than white; that yellow houses, flowers and dresses are light rather than dark grey; that yellow and brown autumn foliage are recorded by distinct tones of grey, that blue snow shadows are recorded as sufficiently darker than the surrounding white snow; in short, that a more detailful photograph with approximately accurate color values and a long, harmonious scale of gradation results.

In using a color filter, exposures must be several times longer than the subject would require without it. This makes it necessary to employ a tripod for almost everything except distant or bright snow-covered landscapes and water scenes, and prevents the use of the filter in photographing rapidly moving objects, but the better results are well worth the slight additional trouble. Three, four, eight and ten-times filters are commonly on the market. While the deeper, longer-focus filters give more nearly correct color values, the lighter filters amply repay their use where shorter exposures must be given. The use of a three-times filter is especially advantageous with a focal plane shutter. As the light efficiency of this type of shutter for any given duration of time is three times that of an inter-lens shutter, a three-times filter may be used and exposures estimated as for an inter-lens shutter, filter computations being unnecessary.

Mental calculation of fractional exposures for the color filter is difficult for anybody not having a good head for figures, and the use of a pencil and paper is troublesome. The simplest plan is to use one of the accompanying pocket exposure tables, according to the speed of the color filter you happen to have, cutting out the proper one and pasting it into a card folder for better preservation. Once the correct exposure has been determined for any subject without the filter, reference to the table tells at a glance the corresponding exposure required with the filter over the lens.

THE COOK RAFFAELE MENOCHIO

Third Prize, May Senior Competition

Most of the average camera user's outdoor photographs are of that class termed average landscapes. As the instantaneous exposure recommended for such views in summer sunshine, and also in winter when covered with snow, is 1-25 second at *f*:11, U. S. 8, the accompanying tables are based on the usual shutter speeds with *f*:11, U. S. 8 stop in the lens, the exposures for larger and smaller stops being figured therefrom.

While many of the figures in the tables are exact, some are only approximate. Exact figures are in bold face type; the others are approximate, but well within the latitude of ordinary plates and films if the correct basic exposure has been chosen. No speeds are quoted which cannot be given with Compound, Kodamatic, Ilex and Optimo shutters, or timed with a watch. Where a blank occurs in the table the required exposure is such that no shutter speed approximates it or, being a mixed number, it cannot be accurately timed with a watch. The next larger or smaller stop, as seems best, should be used with the exposure indicated.

Multiplying all exposures several times in using a color filter so increases the working latitude that the percentage of error due to slight underexposure or overexposure becomes very small. This accounts for several instances of identical exposures for the same lens but different shutter speeds in the accompanying tables. In subjects where blur due to motion is not feared it is better to choose the smaller stops and longer exposures as the precentage of error is less. This is especially true of exposures which must be timed with a watch. It is much easier, for example, to time accurately an exposure of four or eight seconds than of two seconds. The benefits of using a color filter are lost unless exposures are ample and well within the latitude of the plate or film exployed. Color values are seldom important in high-speed work and in photographing rapidly moving objects it is best to omit the color filter. As an *f*:6.3 lens is only 61 rather than 100 per cent faster than an *f*:8 lens, there are only a few instances, except with a three-times filter, when the regularly marked shutter speeds apply with approximate accuracy, and as stated above it is better to select smaller stops and longer exposures, except in instances where poor light, heavy foregrounds or motion demand maximum lens aperture.

Reference to the tables shows that average summer landscapes with light foregrounds in sunlight and similar snow scenes, for which 1-25 second is the correct exposure at *f*:11. U. S. 8, require with the Kodak ten-times color filter ½ second at *f*:11, larger or smaller stops as indicated. With the Ingento Series a three-times filter ½ second is required at *f*:22, U. S. 32.

Summer landscapes and snow scenes with heavy foliage or foregrounds in which contrasts are great, red, yellow and dark objects, shipping about the docks and portraits outdoors ordinarily requiring 1-10 second at *f*:11 are seen to need 1 second with the Kodak color filter, or 1 second at *f*-22, U. S. 32, with the Ingento filter.

Open landscapes without foreground, light buildings, monuments and snow scenes after a storm, usually requiring 1-50 second at *f*:11, U. S. 8, or 1-25 second at *f*:16, U. S. 16, need with the Kodak filter ½ second at *f*:16, U. S. 16, or ½ second at *f*:32, U. S. 64, with the Ingento Filter.

Very distant landscapes, open snow scenes with light foreground, seashore views, yachts under sail and heavy clouds ordinarily requiring 1-100 second at *f*:11, U. S. 8, or 1-25 second at *f*:22, U. S. 32, need with the Kodak filter 1-10 second at *f*:11, U. S. 8, or ½ second at *f*:22, U. S. 32. With the Ingento filter 1-25 second is required at *f*:11, U. S. 8, or ½ second at *f*:45, U. S. 128.

Very distant sea views, sky and fleecy clouds for which 1-200 second at *f*:11, U. S. 8, or 1-100 second at *f*:16, U. S. 16, are the customary exposures are shown by the table to require with the Kodak filter 1-10 second at *f*-16, U. S. 16, or 1-25 second at *f*:16, U. S. 16, with the Ingento filter.

In all instances the indicated exposures must be doubled if the sun is obscured by light clouds or mist but the light is fairly bright. They must be multiplied four times if the sky is gray and the light rather dull.

EXPOSURES REQUIRED WITH A 3-TIMES FILTER

Shutter Speeds at *f*:11, U. S. 8 Without Filter	Lens Stops *f*:5.6 U.S. 2	*f*:6.3 U.S. 2.5	*f*:7.7-*f*:8 U.S. 4	*f*:11 U.S. 8	*f*:16 U.S. 16	*f*:22 U.S. 32	*f*:32 U.S. 64	*f*:64 U.S. 128
1		1		3	6	12	24	48
½		½			3	6	12	24
1-5		1-5		½	1		5	10
1-10		1-10			½	1		5
1-25		1-25				½	1	2
1-50		1-50	1-25				½	1
1-100		1-100	1-50	1-25				½
1-150	1-200	1-150	1-100	1-50	1-25	1-10	1-5	
1-200		1-200	1-100	1-50	1-25			
1-300		1-300	1-200	1-100	1-50	1-25	1-10	1-5

OLD AUNT MARIA MATSY WYNNE RICHARDS

Honorable Mention, Second Annual Competition

EXPOSURE REQUIRED WITH A 10-TIMES FILTER

Lens Stops

Shutter Speeds at *f*:11, U. S. 8 Without Filter	*f*:5.6 U.S. 2	*f*:6.3 U.S. 2.5	*f*:7.7-*f*:8 U.S. 4	*f*:11 U.S. 8	*f*:16 U.S. 16	*f*:22 U.S. 32	*f*:32 U.S. 64	*f*:45 U.S. 128
1		3	5	10	20	40	1m.20s.	2m.40
½				5	10	20	40	1m.20s
1-5	½		1	2	4	8	16	32
1-10			½	1	2	4	8	16
1-25	1-10		1-5	½	1		3	6
1-50			1-10	1-5	½	1		3
1-100		1-25		1-10	1-5	½	1	
1-150		1-50	1-25				½	1
1-200		1-50			1-10	1-5	½	1
1-300	1-100	1-50	1-25					½

EXPOSURE REQUIRED WITH A 4-TIMES FILTER

Shutter Speeds at *f*:11, U.S. 8 Without Filter	Lens Stops *f*:5.6 U.S. 2	*f*:6.3 U.S. 2.5	*f*:7.7-*f*:8 U.S. 4	*f*:11 U.S. 8	*f*:16 U.S. 16	*f*:22 U.S. 32	*f*:32 U.S. 64	*f*: U.S.
1	1		2	4	8	16	32	1m.
½	½		1	2	4	8	16	3
1-5	1-5		½	1	2	4	8	1
1-10	1-10		1-5	½	1	2	4	
1-25	1-25		1-10	1-5	½	1	2	
1-50	1-50		1-25	1-10	1-5	½	1	
1-100	1-100		1-50	1-25	1-10	1-5	½	1
1-150	1-150	1-100				1-10	1-5	½
1-200	1-200	1-150	1-100	1-50	1-25	1-10	1-5	½
1-300	1-300	1-200	1-150				1-10	1-

EXPOSURE REQUIRED WITH AN 8-TIMES FILTER

Shutter Speeds at *f*:11, U.S. 8 Without Shutter	Lens Stop *f*:5.6 U.S. 2	*f*:6.3 U.S 2.5	*f*:7.7-*f*:8 U.S. 4	*f*:11 U.S. 8	*f*:16 U.S. 16	*f*:22 U.S. 32	*f*:32 U.S. 64	*f*:45 U.S. 128
1	2	3	4	8	16	32	1m.4s.	2m.8s.
½	1		2	4	8	16	32	1m.4s.
1-5	½		1	2	4	8	16	32
1-10	1-5		½	1	2	4	8	16
1-25	1-10		1-5	½	1	2	4	8
1-150	1-25		1-10	1-5	½	1	2	4
1-100	1-50		1-25	1-10	1-5	½	1	2
1-150					1-10	1-5	½	1
1-200	1-100		1-50	1-25	1-10	1-5	½	1
1-300	1-150	1-100				1-10	1-5	½

SOME NOTES ON THE FOCAL PLANE SHUTTER

CHAS. T. JACOBS

CONVERSING with other amateurs, the writer has been surprised at the general lack of familiarity with the focal plane shutter. Many have only very vague ideas as to its construction and operation, while others are totally unaware of the existence of a shutter radically different in design from the usual between-the-lens type. This is an extremely unfortunate condition, as the focal plane shutter has several undeniable advantages over the lens shutter, and doubtless many who would otherwise invest in and use one fail to do so simply through ignorance or a misimpression of this shutter.

Among the points of general superiority of the focal plane shutter are its greater speed and greater efficiency, as well as the possibility of changing the lenses on the camera without the necessity of a separate shutter for each lens, owing to the fact that the focal

IN THE WANBONSEE FOOTHILLS A. S. WORKMAN
First Prize, May Junior Competition

plane shutter is built into the camera, not the lens mount. A less general advantage, but an immense one nevertheless, is its adaptability to the reflecting camera — indeed, it has made possible that instrument as we know it today.

Of course there have been arguments brought forward against the use of the focal plane shutter. Among the objections to its use we hear that it takes more space, necessitating a larger instrument, that it distorts, and that it is not as simple in construction or operation as the lens shutter. As for the first, focal plane shutters are fitted to small cameras, so that it can hardly be argued that this point is a very serious one. Regarding the second, it is quite true that the shutter distorts on occasions where there is extremely rapid motion of the subject. But in cases where this is really noticeable, the subject will be found to be one beyond the capacity of the between-the-lens shutter, and surely a slightly distorted image is to be preferred to none at all. Finally, the claim that the shutter is more complex in construction and operation than the lens shutter, while possibly true to a limited extent, is robbed of its formidability once one grasps the underlying principle of the instrument, which is really simpler than that of the between-the-lens type.

The focal plane shutter is not placed anywhere near the lens, but instead is operated just in front of the plate, which lies in the focal plane of the lens — hence the name given the shutter. It is merely an opaque blind running between two rollers, one above and one below the plate (in a few models one on either side). The blind is wider than the plate, and its edges run in grooves so that no light can creep around. In the blind are one or more crosswise slits, each as long as the plate is wide. Normally no slit lies in front of the plate, the blind here being unbroken, and acting as does the slide of a plate-holder in protecting the plate from the light admitted by the lens. When the shutter is released, however, the blind is moved at high speed from one roller to the other, far enough for one of the slits to pass in front of the plate, momentarily admitting to it the light from the lens, thus making the exposure.

Consideration will reveal that the exposure of the plate is not the time elapsing between the starting and stopping of the blind, but rather the length of time any one point is uncovered. This time depends on two factors—the speed with which the blind travels, and the width of the slit. The former is governed by the tension under which the pulling roller (usually the lower) is held. This is usually adjustable, but on some models is automatically taken care of. The second factor — the width of the slit — is of course a variable one. There are two ways of obtaining this variation — the use of a blind with several slits each of different width, and the use of one with a single slit of adjustable width.

The first of these two types is the simpler of the two, but requires a longer blind, as between each slit and the next there must be enough solid curtain to cover the plate. The mechanism is so arranged that only one slit passes in front of the plate when the shutter is released. After one exposure the instrument is ready for an exposure with the next wider slit. Should a still wider slit be required, the shutter must be released, the plate being protected while this is being done. On the other hand, should it be desired to use the original slit again, the blind must be wound back one slit — or if a still narrower slit is wanted, still further. This rewinding is done by a key on the outside of the instrument, and while it is being done (as well as when the shutter is being released for purposes of setting as mentioned above) the plate must be protected from the lens. In a reflecting instrument this is easily done by means of the mirror. In any other camera, however, the slide must be inserted in the plate-holder, or the lens capped.

The second type of blind, though a little more complex in construction, is possibly a trifle simpler in operation. It is made in two parts, so arranged that the distance between them is variable. This variable space constitutes the exposure slit, and its width is adjustable from a very narrow opening to the full height of the plate. The shutter must be rewound after each exposure, the distance the key is turned in rewinding usually governing the width of the slit. On many models it is possible, without releasing the shutter, to alter the width of the slit, in one direction at least, after the shutter has once been wound. This is a great convenience in cases where it is found that the subject to be photographed calls for a different exposure than that for which the shutter has already been set. Some shutters with this type of blind are known as "self-capping." That is, the two parts of the blind are made to overlap while rewinding is going on, thus obviating the necessity of protecting the plate in any other way. This is a particular advantage on cameras other than reflexes, as they have no mirror which can be conveniently used for protection of the plate.

The range of instantaneous speeds obtainable with the focal plane shutter is from about one tenth of a second to one one-thousandth of a second on most models. Besides these speeds, time exposures are possible with either type of blind. The largest slit in either case is as wide as the height of the plate, and can be stopped in front of it. This permits focusing at the back of the camera, as well as time exposures of any duration, which latter can be terminated by simply relasing the shutter. Bulb exposures are usually

A STUDY IN LIGHT HOWARD C. CLOYES

Second Prize, May Junior Competition

possible as well — i. e., the largest opening can be brought in front of the plate by pressing on the release, and it will remain there until the pressure on the release is terminated. An automatic adaptation of the bulb exposure is often included, by which exposures in the neighborhood of one fifth of a second to a whole second are obtainable.

The way in which the exposure obtained at any setting of the shutter is indicated varies on different instruments. In some cases, usually where there is no external tension adjustment, the exposure is indicated directly at the key, or is automatically registered nearby. In, probably, most cases, however, a table is supplied with the shutter, usually attached to the camera, showing the exposure obtained with any combination of blind slit and tension. A little examination of a table of this kind shows that in many cases the same exposure can be obtained with one tension and slit as results from the use of a higher tension and wider slit. The natural inference is that the two are equivalent in every respect, and hence that there is no preference, in theory, as to which is used. This is not strictly so, as this brings in a question of the efficiency of the shutter, which is greater in some cases than in others. Naturally it is desirable to understand this subject so the shutter can be used at greatest efficiency, particularly when light conditions are bad, an motion of the subject exists.

The efficiency of a shutter at any exposure is the ratio of (a) the amount of light a tually admitted to the plate to (b) the amount which would be admitted were the le fully uncovered as long as it is uncovered at all. Thus in the lens shutter, where a g portion of the time of exposure is consumed in the opening and closing of the leaves, t efficiency is poor, falling to less than one half — or fifty per cent — in many cases. T efficiency of the focal plane shutter, on the other hand, is usually quite high. It is oft argued that, owing to its peculiar construction, it is really 100% efficient. This is not s as to fulfill this desirable condition, the plane of the blind would have to coincide with th of the plate—a manifest physical impossibility. Usually the blind sets about 3/8 of inch, or one centimeter, away from the plate. On some film cameras fitted with the foc plane shutter this distance is reduced to 1/8 of an inch, a decided improvement. On th other hand it is often greater then 3/8 of an inch, a condition not to be desired, as the nea the blind is brought to the plate the greater will be the efficiency of the shutter, oth conditions being equal.

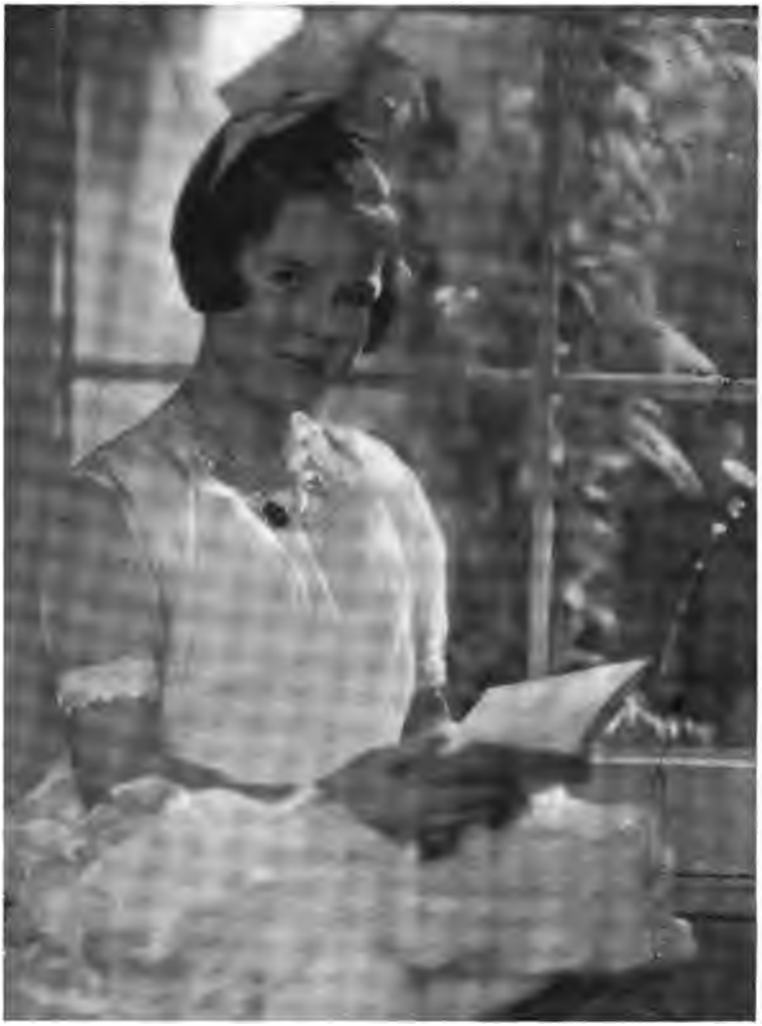
To get a rational idea of the light action on the plate when the focal plane shutte used, an individual point on the plate must be considered. As the blind is operated (let assume downward, as is usually the case), the first direct ray of light from the lens is received by any point just as the lower edge of the slit passes the imaginary line betw the point and the top of the lens. A tiny space of time elapses before this edge lines between the point and the bottom of the lens, and during this time the lens is being u- covered to the point. For a time then, the lens acts fully on the point. Then the top of t slit comes in line between the point and the top of the lens, and as the blind continues move the lens is covered, so far as the point is concerned, from the top downward. S even in the focal plane shutter some time is consumed in uncovering and covering t lens — considered from the position of a single point on the plate. As all the points on th plate receive the same exposure, this is true for the whole plate. This time is usua but a very small portion of the total exposure, however, and so it is rarely that th efficiency of the focal plane shutter drops to the neighborhood of that of the lens shutt

Focal plane efficiency depends on three factors: viz., lens aperture used, width slit employed, and distanee of blind from plate. If the first is expressed by its *f* numb and the second and third in the same units (1/8 inch is preferable to one inch in the En- lish system as it avoids fractions), it can be shown that if the shutter speed is unifor

$$\text{Efficiency} = \frac{\text{Lens aperture x Width of slit}}{(\text{Lens aperture x Width of slit}) + \text{Blind distance}}$$

From this it may be seen that the efficiency of the same instrument depends only the product of the lens aperture and shutter slit employed, as blind distance is consta It is merely necessary to divide this product by itself plus the blind distance, and th efficiency is obtained, expressed as a fraction. It can be obtained in per cent by multip- ing this result by 100. It is absolutely necessary, however, that in using this formu the lens aperture be considered by its *f* number, and the shutter slit and blind distance measured in the same unit. The accuracy of the figure obtained will depend, of course on how near an even speed is maintained by the blind throughout the exposure. I modern instruments the variation in speed in the same exposure, is very slight, owing the perfection which the shutters have attained.

Speed work is the particular field in which efficiency is important. The reason two-fold. First, the exposures which can be given are so short, owing to motion of t subject, that underexposure is bound to result, making it desirable to get the maxim



MISS ELSIE

R. W. JOHNSTON

Pittsburgh Salon, 1922

MISS B. VICTOR D. ELMERE

Third Prize, November Senior Competition

light action on the plate in the time available. Secondly, the short exposure, with its narrow slit, and the wide aperture which must be used in the lens, are the very conditions under which the efficiency of the focal plane shutter drops badly. There is one thing which can be done, however, to increase efficiency — use the highest tension the instrument affords, as this will permit a wider shutter slit without increasing the length of exposure On instruments where there is no tension adjustment for the operator to use it will be found that at the lower slit widths the tension automatically increases. Incidentally it might be mentioned that the high tension will help to minimize the distortion produced by this shutter, mention of which was made above.

In cases, however, where efficiency is fairly high in any event — i. e., on the longer exposures with smaller apertures of the lens — it may be advisable to use a lower tension, as higher ones are certainly harder on the mechanism of the instrument. The difference in efficiency caused in a case of this kind by halving or even quartering the shutter slit to

PORTRAIT OF MISS F. RICHARD T. DOONER
Pittsburgh Salon, 1922

compensate for the decreased tension is not sufficient to be of great account. It is only as the faster exposures and wider apertures are used that it behooves the user of the focal plane shutter to concern himself with the efficiency of his instrument, which is very high in all other cases.

There is one penchant of the focal plane user which certainly operates to his disadvantage in many cases — the mania for the use of a high speed when it is not necessary. Some people are so obsessed with the idea that the focal plane shutter is nothing but a speed instrument that they use the higher speeds all the time. Nothing is more ridiculous, especially in cases where the rendering of the subject would be improved by the use of a smaller lens aperture, and correspondingly longer exposure. Underexposure often results from this practise of using the faster exposures, not only because it is often carried so far that correct exposure cannot possibly result, but also because the varying efficiency of the focal plane shutter at different settings upsets the equivalence of different combinations of lens apertures and exposures. Thus, though 1-50 of a second at *f*:16, and 1-4 of a second at *f*:5.6 are theoretically the same, the latter setting with the focal plane shutt would not admit as much light as the former, owing to considerably decreased efficienc

Because of its high efficiency at the slower exposures, even when used with a wi aperture at the lens, the focal plane shutter is a fine instrument for photography whe the light is poor, and when with the ordinary shutter an instantaneous exposure is precluded. This feature of its use is often overlooked by those who consider it first, la and always a speed instrument.

It is hoped that more people will be brought to realize that in the focal plane shutt they have an instrument which, with almost no exception, will do all that the lens shut will, and a lot besides — an instrument not built for one single class of work, but for conditions — and an instrument which is flexible enough to do them all justice.

AN IMPROVED ENLARGING EASEL

CLIFFORD CORNWALL

ARTICLES on enlarging apparatus appear quite frequently in th photographic journals. These articles have covered fully th details of the lantern, but little has been written about eas Anybody possessing a camera with all the necessary adjustmen for taking views, especially of architectural subjects, will obta perfect negatives, so far as perspective is concerned, and th ordinary easel for enlarging will work satisfactorily. With th small folding or so called vest pocket cameras the case is alter These cameras at the present time are extremely popular, fact which indicates that the "take it small and then enlarge" practice is growing favor with the amateur. While some of the 2¼″ x 3¼″ folding cameras have ris and falling fronts, neither the folding nor the reflecting camera which the writer posses has this feature.

In photographing tall buildings with either of these cameras it becomes necessar stand a good distance from the subject in order to hold the camera level and include al the building. If the building is very tall, an extremely small picture of it will be secur and this will necessitate enlarging. On the other hand if it is impossible to get far enou away from the subject to do this, but is compulsory to stand near the building, the lin will not be parallel and will run closer together at the top. Photographs of various su jects will show distortion and poor perspective. Here it becomes necessary to enlarg primarily to correct these defects. Contact prints of the 2¼″ x 3¼″ size are qu satisfactory, but if we have good negatives it is really worth while to enlarge to post ca size at least, and in doing so correct as many faults as possible.

The easel herein described was designed to enable the operator to produce enlargements with all the lines, whether vertical or horizontal, in their proper plane. By referri to Figs 1 and 2, the reader will notice that all tilting movements are obtained by mea of a universal socket. In obtaining just the portion of the picture that is desired in th enlargement we increase the amount of foreground or sky by raising or lowering th printing-frame holder. All horizontal movements should be made by sliding the negati holder in this direction, as by this means the desired portion of the negative is cent with the source of light. Printing frames of the professional type should be used w

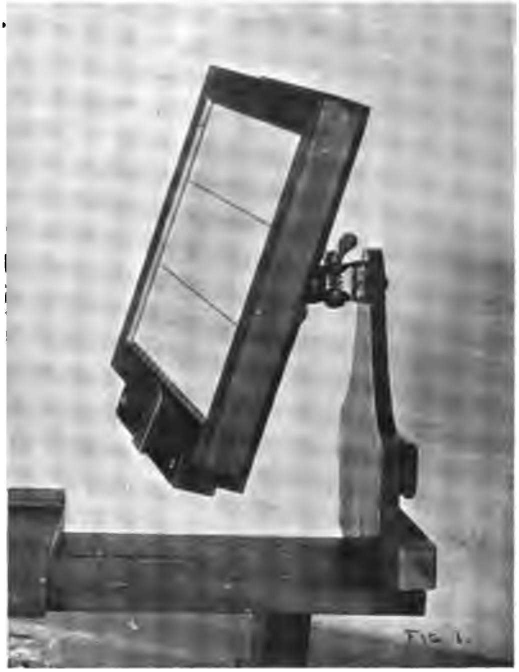


Fig. 1.

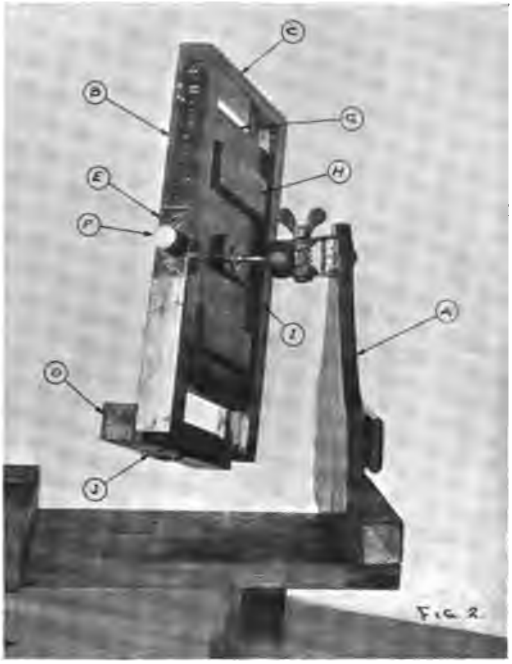


Fig. 2.

this easel, and they can vary in size from post card to 8″ x 10″. Care should be taken to see that they do not vary in thickness, that is, more than 1-8″ of an inch.

By the use of the printing frame white margins are obtained on the picture, a most desirable feature. It is true that the glass absorbs a little light (about 10%) but it is useful if at any time it is necessary to title or number the enlargement. The titling is done by writing on the glass with india ink. When changing to another negative it can be erased with a wet cloth. The advantages of writing the title in this way are: first, it can be written in the most suitable place; second, it will be of uniform size under any degree of enlargement; and third, it will not spoil the negative for use when no title is desired.

The capacity of this easel is 8″ x 10″, and it is shown in Fig. 1 with a frame of this size in position. By observing closely, four lines can be seen, two running horizontally across the frame, and two vertically. These lines are drawn on a sheet of heavy white paper, and assist in correcting and composing the picture. After all the necessary adjustments are made, the white paper is replaced by the sensitized paper, and the exposure made. The printing frame is made to register properly by pressing a thumbtack into the lower part of the frame alongside of the spring clip, or, if desired, a mark on the frame will work satisfactorily if the light in the darkroom permits it to be seen.

In selecting material for this easel, any hard wood that is well seasoned will be suitable. The most desirable is maple, as it is easy to work. The support A, to which the universal socket is fastened, will have to be devised to suit conditions. The one here shown was made for a certain type of enlarger, and later when this machine was exchanged for another a few alterations were necessary. The majority of camera users have a universal socket in their possession, but for those who have not this is a small item of expense. Nearly any make will be suitable, but it must be of a sturdy construction to prevent vibration. It is attached by means of a ¼ inch stove bolt.

The side members of the frame B are 1″ x 1″ x 10½″, with a ½″ groove ¼″ deep run-

THE AFTERNOON PAPER W. W. ZIEG

Pittsburgh Salon, 1922

ning the full length. One of these pieces should be notched on the side opposite the groove to receive the side plate E. The top end brace C is ½" x 1" x 7½". The lower end brace D is made from material 1" x 1¼" x 7½", to take care of printing frames that are approximately one inch thick. In Fig. 2, the ¼ inch square tongue on this part is clearly shown. If desired, and to save a little work, the tongue can be made separately and glued to the inch-square piece. This part is fastened to the side members by means of a wood screw 1¾" long, in either end, as shown in Fig. 1.

A small metal plate E, with two counter-sunk holes, and a tapped hole to receive a thumbscrew, is fastened to the side piece B with two flat-head wood screws. Any hard metal can be used for this plate, which should be from 1/8" to ¼" thick, one inch wide and about two inches long. The thumb screw F need not be of any particular size; almost any kind that is available will be suitable if it is over an inch in length. The point should be blunt to prevent tearing up the edge of the slide.

The slide G is made of material ½" x 6" x 8", and should be planed to size and fitted after the frame of the easel has been assembled. Care should be taken that it slides

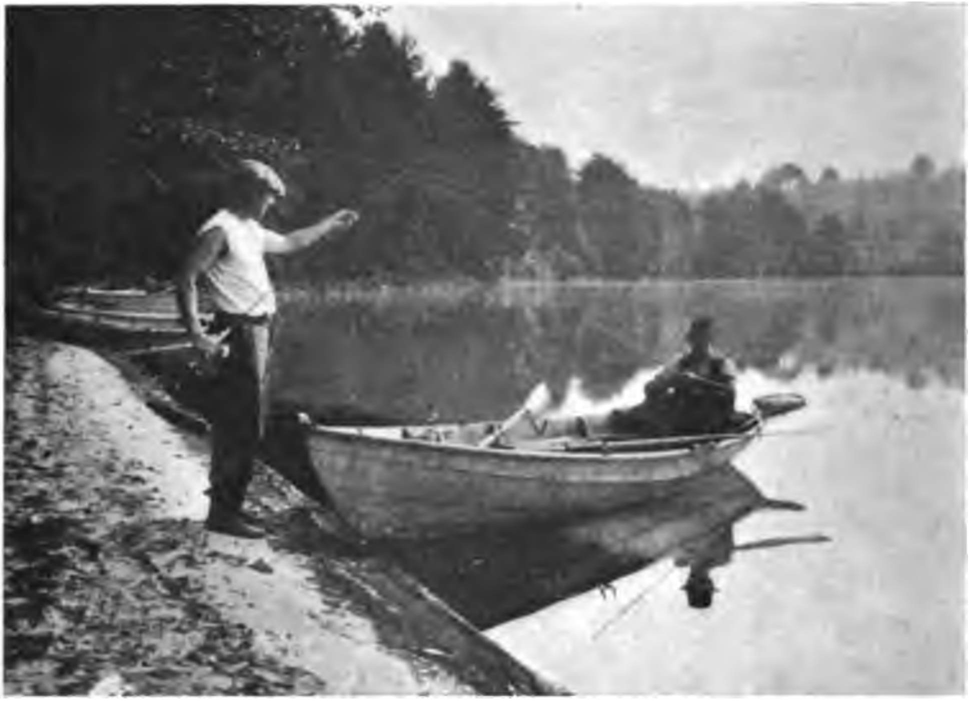
QUEEN ANN'S LACE - J. H. FIELD

Third Prize, November Senior Competition

easily after it is finished. To one side of the slide, which we will call the back, two cleats are attached with glue and a few brads. These are ¼" x 1" x 4½" and their appearance is improved by slightly beveling the outside edges.

Another piece of metal I, similar to E except that the ends should be slightly rounded, is tapped with a ¼-20 thread to receive the threaded part of the universal socket. The part I is located with the tapped hole in the center of the slide, and is attached with two wood screws of suitable length. The amateur, who has no facilities for making the metal parts, will be able to get them made up at a garage or repair shop, at no great expense.

The spring clip J was made from an old trouser hanger, is 1 inch wide, and is fastened to the bottom of the lower brace by means of three round-head screws ½ inch long. The shape of the piece is clearly shown in Fig. 1. The spring should be fairly stiff and will be found strong enough to hold the frame in any position except when tipped forward excessively. It, however, is not necessary to tip the easel forward, as all we have to do to obviate this is to reverse the position of the negative in the holder. In regards to the finish of the parts nothing need be said except that, after sandpapering, it is well to give the wood a coat of varnish of some dark color.



PREPARING FOR THE FRAY GEO. W. FRENCH

PREPARING FOR THE FRAY

It is not just luck that makes some pictures successful and some failures. Even though, as often happens, the photographer has no hand at all in the arrangement of the subject, it is the ability to see and snap at the right time, which is always part of an artist's make-up, that makes the pictures successful. We do not think that Mr. French deliberately posed his two subjects in "Preparing for the Fray" or that he asked the man in the light shirt to stand against a background of dark foliage, but he probably saw what an effective accent the white shirt made in the picture and snapped it while the snapping was good. Another commendable feature in the picture is the differentiation of the receding planes so that the further shore really looks as if it were considerably further away than that close at hand. This is an admirable genre and one that is probably prized very highly by the two fishermen who figure in the picture. Made in Maine with an Ansco 2¼ x 3¼ camera fitted with an anastigmat lens of 4 inches' focal length, used at *f*/8, exposure 1-25th second, hazy light at 7.30 A. M. in August, Eastman film developed with pyro, enlargement on Artura, Grade E.

SOMETHING NOVEL

The process which I am going to describe is not entirely original, as it has been occasionally employed by photographers heretofore, but, on the other hand, it will appeal to many readers because it is practically a novelty as far as many readers are concerned.

The process consists of getting a photographic image against a ground of gold or silver. To secure this the simplest way is to make a thin, strong transparency on an ordinary slow dry plate, similar to those used for making lantern slides. However as they are not generally stocked in sizes larger than lantern slide (though they can be got to order sizes) or ordinary plates will have to be used; these can be had in all sizes, and will be found to give results almost equal to any lantern plates on the market as far as this special purpose is concerned.

For the benefit of those who have not yet made transparencies, I will say that they are made in much the same way as a print on very rapid bromide paper. The dry plate is placed face down on the negative in a printing frame and given a very short exposure about one second two feet away from an ordinary fish-tail gas burner from an average negative may be taken as a rough guide. The plate is then developed in the ordinary way — but it will, of course, be a positive, and development should be stopped as soon as the image on the plate looks right by reflected light, judged as in a bromide or gaslight print.

When fixed, it will appear very thin by transmitted light, but when laid on a piece of white paper should look quite strong. The plate can be used as it is, or toned to a desired color by one of the usual methods from bromide paper or lantern slides. I take it for granted that it is understood that the transparencies can be made by either contact, enlargement, or reduction, though, of course, if the picture is wanted the right way round, the negative must be reversed, as afterward it is to be viewed from the glass side. If printing from kodak films by contact, all that is required is to place the film face down in the printing frame; if by enlargement or reduction, you can either reverse the negative in the enlarger or expose the plate onto which you are enlarging through glass. Reversing the negative is best, as there may be a little dirt on the glass of the transparency which would show on the finished picture.

When dry, the plates are coated on the emulsion side with a silver or gold paint. Ordinary gold or bronze paint (as sold by stationers) or the aluminum paint generally obtainable is all that is required. This can be painted on with a brush in the usual manner but it is much better if flowed on like negative varnish. To do this, pour a pool of the liquid paint onto the center of the plate, then tilt slightly until the liquid flows to one corner; next it is tilted at another angle until another corner is reached, and so on to the last corner, when the surplus liquid is allowed to run back into the bottle. This method gives a good, even film provided that care is taken to avoid waves. If necessary, a second coat can be given in the same manner. When the first is dry a piece of paper should be pasted over all, so as to avoid risk of scratching. The picture is now ready for framing.

A narrow gilt bead is the best style of frame for this class of picture.

A description of the completed article is next to impossible, but I can sum up by saying that they have much of the brilliancy and relief of a transparency, while the necessity of viewing by transmited light is avoided.

I can recommend the process as worthy of attention by all classes of photographers. I would also suggest that entrants in competitions try one or two pictures by this method; it will be found that results equally as pictorial as those of the old processes are readily obtainable. Also at exhibitions and displays, such pictures will attract much greater attention than their more ordinary rivals. It may be that they will even successfully catch the judge's eye as especially deserving an award.

I feel sure that professional photographers will find it worth while to turn a few pet negatives into backed transparencies, either for show case or as specimens for orders. — *A. P. R.*

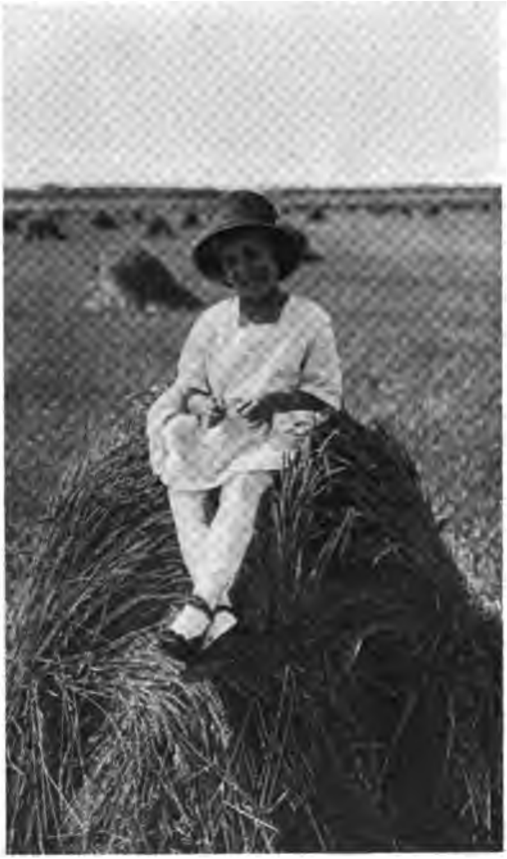
HANDLING UNDEVELOPED PLATES

Many operators have a habit of taking exposed plates out of the slides and putting them in a plate box until they are ready to develop. There is nothing wrong with the idea, but the way the plates are laid in the box makes a great difference. The first plate should always be placed in the box, glass side down. This prevents the emulsion side from coming in contact with any chemical dust or moisture that may have been taken up by the pulp board of which the box is made.

When you lay the first plate in the box glass side down, and the second plate glass side up, with nothing between the two, you bring the emulsion sides of the two plates together and they will be perfectly safe until you are ready to develop them.

Traces of perspiration and chemical impurities are transferred from the fingers to the backs of plates during handling. These marks from handling will do no harm if the emulsion sides of the plates are always packed together. But if the first plate is laid into a box emulsion side up, and the next plate the same way, the emulsion side of the first plate comes in contact with the finger marks on the glass side of the second plate and these marks are offset on the emulsion. When the plate is developed, the marks sometimes show as distinct finger prints and sometimes only as irregular opaque blotches. Bare hands never come in contact with either the glass or the emulsion side of a plate in manufacturing or packing. The plate makers and packers wear clean gloves and they handle plates entirely by the edges. Plates are always packed in the boxes face to face and back to back.

Handle them the same way in your darkroom and you will not have any of your negatives ruined by finger marks. — *Photo Digest.*



PRODUCTS OF MANITOBA WM. GOULD

PRODUCTS OF MANITOBA

It is hard to take a good portrait in full sunlight because the shadows are apt to be rather dark and heavy by comparison with the highlights. The remedy for this is a full exposure and rather short development. The effect of sunlight can be obtained, however, by making the exposure at a time when the sun is obscured by light clouds; when the light is such as would be described as "bright, hazy sunlight." Then you can get good strong light and shade without too much contrast in the tones. Mr. Gould's picture was made under just such lighting

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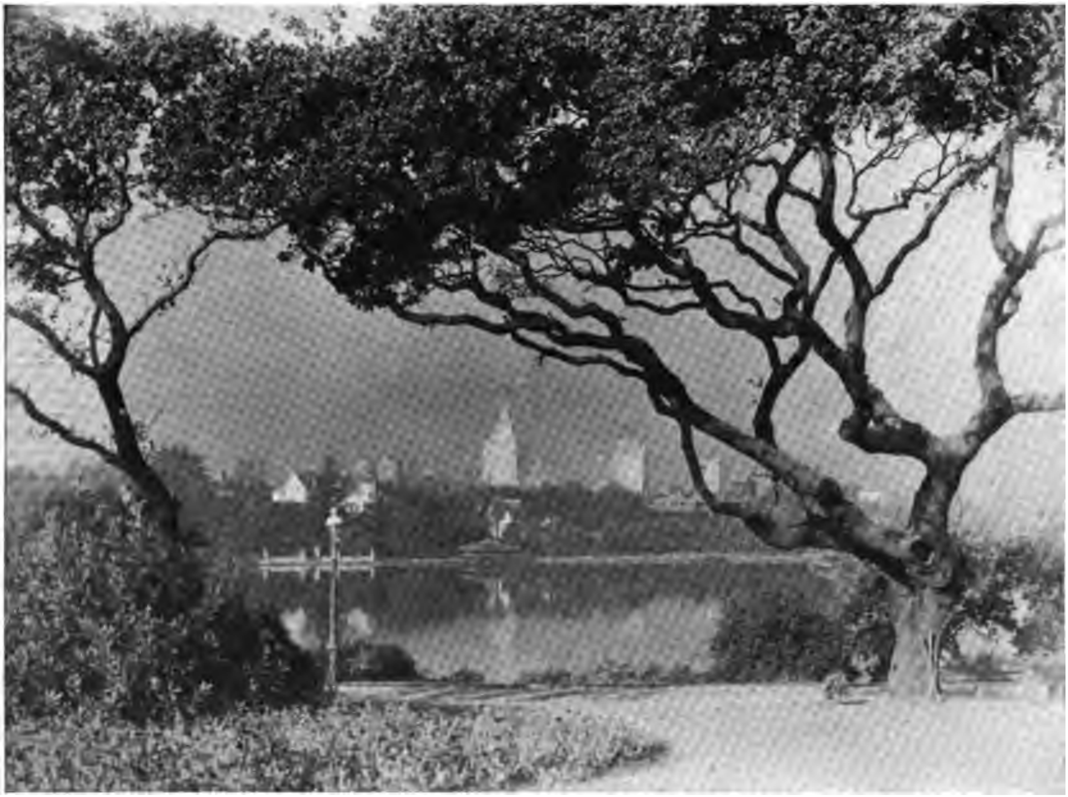


"TOWERED CITIES PLEASE US THEN" FORD E. SAMUEL

TOWERED CITIES PLEASE US THEN

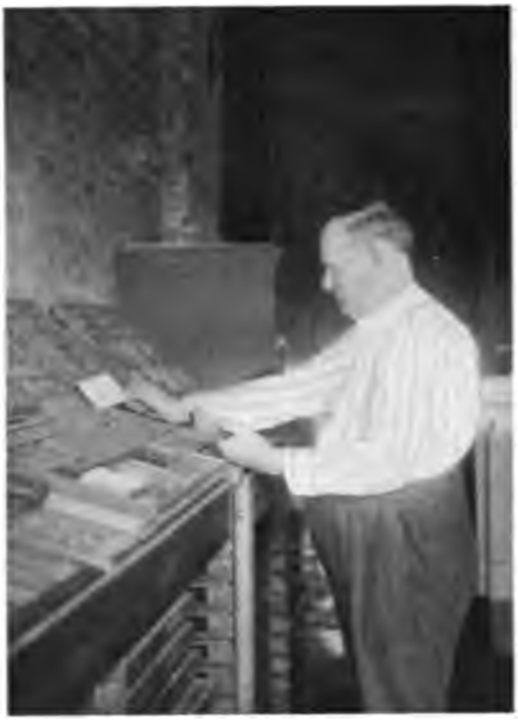
The "vista" arrangement in pictures is always very attractive when it is handled with as much skill as is shown in Mr. Samuel's striking photograph reproduced above. The use of a five-times ray filter with an orthochromatic plate has given correct tone rendering, so that the white buildings stand out against the slightly lower toned sky as realistically as they do in nature. The only modification we would suggest is to darken the lower part of the print, especially in the lower right-hand corner. This could easily be done in printing by shading all but that part and giving it a little more exposure to the printing light. This would accentuate the delicate tones in the distance and add very considerably to the effectiveness of the picture. The trees in the foreground are very interesting in their intricate line arrangement. Made in Oakland, California, with a 6½ x 8½ Seneca View camera, Wollensak Velostigmat, Series II lens of 9½ inches' focal length, used at *f*:16, exposure 2 seconds with a five-times screen, Standard Orthonon plate, developed with pyro, print on Azo, grade E, No. 2.

ACETIC ACID NO. 8

Acetic acid No. 8 is called for in various formulae. This means 28% to 30% acetic acid to 100 parts of water. By using glacial acetic acid which is almost 100% strength, we can reduce the size of containers and save storage space. When 28% acid is needed, simply dilute 25 parts of glacial acid with about 75 parts of water by weight and then you have a product that is purer than the commercial No. 8 acid. A hydrometer test on acetic acid is misleading. The hydrometer goes up to 77% strength and then falls to the same value on 100% as on 43%. This is due to the fact that the acetic acid combines chemically with water to make a definite hydrate known as ortho-acetic acid. Acetic acid dissolves iodine and in prints made with non-abrasion developers containing potassium iodide, it is quite possible that some iodine is set free which dissolves in the acetic acid present. This solution attacks silver like a potassium iodide solution of iodine and acts as a reducer on prints if they are left too long in an overworked acid fixing bath.

ILLUMINATING IN GENERAL

To the portraitist the illumination of the sitter is a matter of such paramount importance that he very often overlooks the very important question of the general illumination of his premises. This point has been impressed upon us by recent visits to otherwise well-appointed establishments, where the very latest and best forms of artificial light were installed for the purposes of negative-making, but where the lighting of the reception-room, and even of the studio itself, were years behind the times. The lighting of many reception-rooms, even upon a sum-



AT THE CASE H. P. TURRELL

mer's day, would lead one to believe that the owners were afraid of letting their customers see the quality of their work. Windows filled with stained glass, sometimes mixed with antiquated transparencies; windows opening into small rock-work conservatories, heavy curtains partly drawn, all help to make a depressing effect, which is not the less evident at "lighting-up" time, when the ill-placed and inefficient lamps, either gas or electric, totally prevent a proper inspection of the work displayed, although they are sometimes effective enough in showing the working-up.

We contrast this state of things with the showrooms or, we might say, gallery of a firm of commercial designers which we had occasion to visit recently. Here everything was fresh and bright, walls of a neutral tone, and all softly illuminated by light reflected from special fittings, each of which held a cluster of concealed metallic filament lamps. There were no hard shadows and no reflections either from the surfaces of the pictures or the glasses which covered them. Upon making inquiry, we found that the price of such fittings was very reasonable, a sovereign covering the cost of one of medium size, exclusive of the lamps.

It is, however, in the studio itself that the highest point of inefficiency is reached. Except for the arc lamp used for lighting the sitter, there is often barely enough light to enable the visitor to pick his way through the furniture. One or two worn-out carbon glow-lamps, fixed high in the roof, give a sickly glimmer, and serve to emphasize to the sitter the glare to which he is often subjected. This is particularly felt by children, and especially when the portrait lamp is switched on after they have entered the studio. As it is an axiom that a room should be as brightly illuminated as possible before making flashlight groups or portraits, so it should be when the electric light is used in the studio. In this case the reflected light system is hardly desirable, as a more cheerful effect may be obtained by the use of bracket lights with suitable globes or shades. With modern lamps the question of expense need not prove a deterrent, the cost of current being reduced to a point which enables it in many districts to compete successfully with gas.

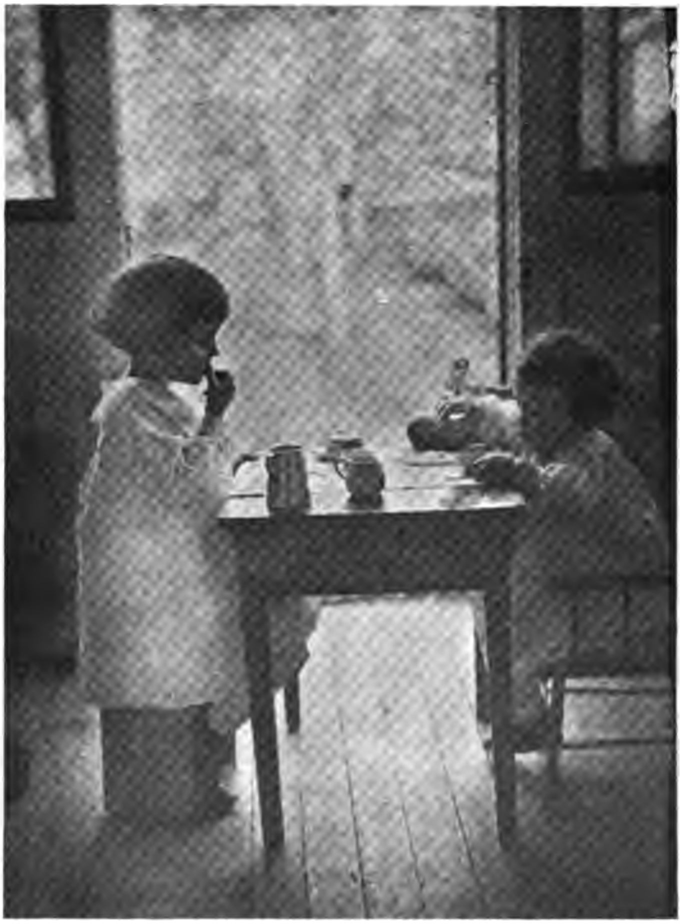
The lighting of the photographer's show-window is, as a rule, fairly satisfactory, although it sometimes suffers from a want of adaptability, a fixed position for the lamps not being suitable for all schemes of window-dressing. A few standard lights, with suitable, reflecting shades, will often allow of a striking effect being obtained with little trouble. Illuminated signs are not used by the profession to as large an extent as they might be. We do not advocate an emulation of the picture-palace style, but a neat transparent sign, with or without a pictorial center, would often arrest the eyes of those who would not notice the window display, especially in crowded thoroughfares. The idea of illuminating a special lantern inscribed with the words, "When this light is burning, the electric studio is in operation," is not a new one, but such a sign clearly conveys to the sitter with little spare time that he will not be kept waiting while the studio is prepared for him. — *British Journal of Photography.*

AT THE CASE

This is a well arranged and, in many ways, very successful figure study. It would have been better if the lighting had not been quite so flat, as there is not quite enough modeling and relief on the face. This might have been remedied by selecting a different point of view, so that the light was not directly back of the camera. The dark and comparatively plain background is a good feature and possibly this would not have been available if a different viewpoint had been chosen. It is interesting to note that this picture was made with a home-made camera taking a 5 x 7 plate. Other data: R R Planatograph lens of 8½ inches' focal length, used at f/8. Light from three north windows on a cloudy day at 10 A. M. in August, exposure 8 seconds. Central Pan-Ortho plate, developed with M. Q., print on Artura Iris E Smooth.

DISPLACEMENT OF FOCUS BY RAY FILTER

The displacement of focus by the ray filter is a relative matter. In some cases it is important and in others it does not matter at all. The amount of the displacement is controlled by the thickness of the filter glass, which should be optically parallel if the most precise definition is demanded. With the same filter and lens, the focus for distance is very little changed, but it reaches its maximum error when focusing for equal sized images in copying or other work. When the image is smaller than the object, the best place for the filter is in front of the lens. Stopping down acts as a corrective. The use of gelatine filters which have no appreciable thickness will reduce displacement to a minimum. The displacement of a glass filter is backwards when the filter is in front of the lens and it amounts to about one third of the thickness of the glass. On ordinary landscape pictures the shift is practically unnotice-



TWO'S COMPANY LOUIS A. DYAR

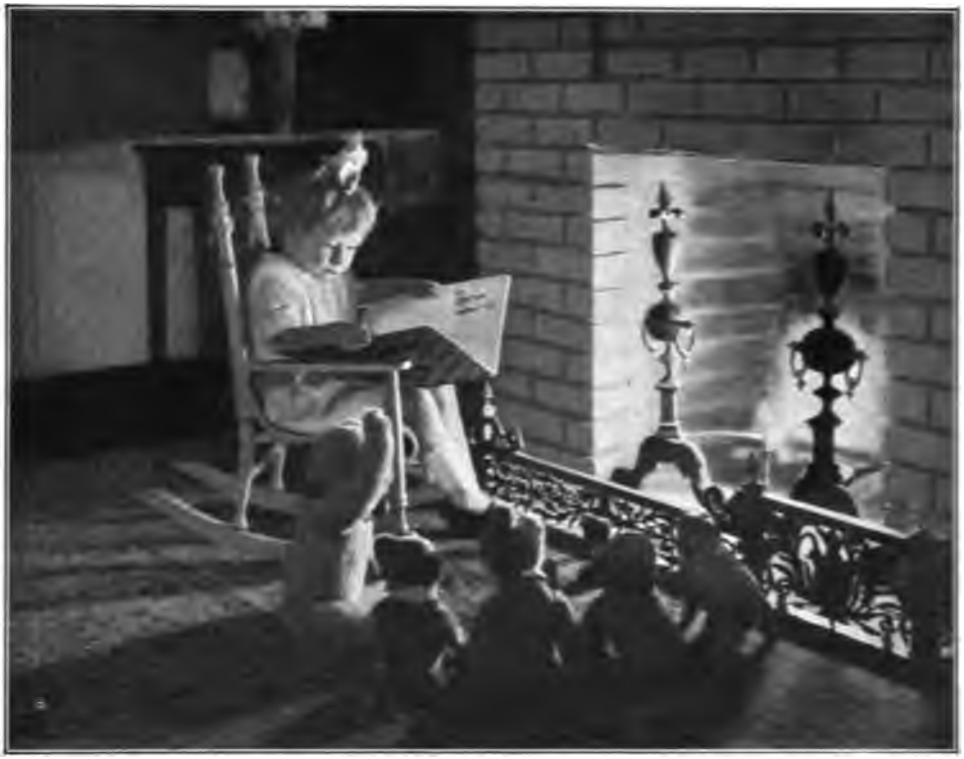
able because of the depth of focus, but on flat plane copies, the error is quite apparent when using large stops.

TWO'S COMPANY

A group of two is harder to deal with successfully than any larger number and the reason for this is that there is apt to be conflicting interest unless one of the two figures can be made obviously more prominent than the other. This means that the picture often becomes a "genre" because in the effort to obtain unity of interest the artist frequently emphasizes the occupation rather than the people in the picture and makes both of them subordinate. In "Two's Company" Mr. Dyar has very cleverly emphasized one of the figures by contrast in lighting and by outlining the face strongly against the light background of the open doorway. In this picture the occupation of the children is the main feature of interest, and both figures are subordinated to some extent. The faces are not brought out clearly, both are in shadow, yet there is a tremendous amount of character and likeness in the attitudes, and the silhouette of the child on the left is most expressive. The lack of parallelism in the background is a little disturbing. Enlarged from a 3¼ x 4¼ film made with a Rexo camera, Cooke anastigmat lens of high speed used at *f*:4, good light in June. Print on Artura Iris from an enlarged negative.

COPYING

To copy a line drawing or an engraving, don't waste time with ordinary sensitive materials. Get a slow plate, a regular process plate preferably, and give an appropriate exposure. Develop in hydrochinon developer. There are no half tones to consider, so develop till sufficient density is obtained, and you will then have a sparkling black and white negative. If you develop too far, you may block up lines with a little fog. All you have to do is to rinse a moment or two and use a weak solution of potassium ferricyanide and hypo. This cuts out the fog and you arrest action by washing. If you prefer, wash the plate and then immerse in some ferricyanide and hypo mixed according to the directions for Farmer's reducer. If you have printed matter on the black of subject, use a black velvet backing when copying.



BY THE FIRESIDE ARCHIE TOWART

First Prize, Marshall February Competition

DEVELOPING BROMIDE ENLARGEMENTS

Bromide enlargements from hard negatives are best made with full exposure so as to secure detail in the highlights. The shadows, of course, will be overexposed and would become too dark if the ordinary method of development were used, but you can improve the results by diluting the developer with about an equal volume of water. This slows down development and the image builds up slowly. The shadows do not "run away" from the highlights and the prints will be found to be much more satisfactory.

BY THE FIRESIDE

In the February Prize Competition for amateurs for pictures taken with Meteor Flash Powder or Cartridges, organized by John G. Marshall of 1751 Atlantic Avenue, Brooklyn, N. Y., the $50 prize was awarded to Archie Towart, Jr., 35 Campbell Street, Caldwell, N. J. whose picture is reproduced on this page. The entries in this contest were judged on (a) the advertising value to the manufacturers of the flash powder, (b) general interest, (c) pictorial composition, (d) appropriateness of the setting and (e) technical quality of the photograph. In all these respects Mr Towart's picture ranks very high and it is our opinion a very fine piece of work. Advertising value, we notice, is the requirement that is placed first, but it seems to us that if a picture possesses general interest, if it is well composed, its setting is appropriate and it is of high technical quality, its advertising value would naturally be very great. There is no doubt at all but that Mr. Towart's photograph will prove its value as an advertising attraction, for it is of great general interest, it ranks high as a pictorial achievement and the appropriateness of the setting and general technical quality are beyond criticism and the makers of the flash powder are to be congratulated on having secured the privilege of using a picture of such unusually high quality.

NEGATIVE VARNISHES AND A SUBSTITUTE

Although no practical photographer will deny the efficacy of varnish for preserving much-used negatives, writes L. Tennant Woods, in *Photo Notes*, comparatively few photographers use it. The probability is that there are many like myself who cannot successfully apply modern commercial varnishes, particularly those of the shellac and spirit variety made for use with heated negatives. It is all very well for armchair experts to tell us how to apply it, but I notice that most of them always make the bewhiskered joke about more of the varnish going down the coat-sleeve or the arm than upon the film of the negative.

Varnishing with me is a necessity, as I frequently take hundreds of silver prints from one negative in all kinds of weather, and I have found that, however careful one may be with an unvarnished or otherwise unprepared negative, it is impossible to proceed very far with the printing without silver stains appearing on the negative.

I have always been in favor of those methods which enable one to specially treat a negative while it is wet, so that it will dry in a state quite impervious to silver stains, scratches, or other kinds of damage, and as some such methods do not appear to be generally known, not being found in ordinary text or reference books, the formulae and mode of using may be of service to those who, like myself, look upon the commercial varnishes as a kind of anathema.

Shellac is unquestionably one of the best bases for varnish, and probably the most widely used, but I prefer it in a watery solution in which the drained negative may be soaked. My formula is:

Borax	1 oz.
Orange shellac	5 oz.
Water	1 pt.

Dissolve the borax in the water by boiling, add the shellac broken up in small pieces, and keep hot until all is dissolved. Then filter, or allow to stand for some days and pour off the clear part from any sediment. The fresher the shellac, and the longer it is allowed to stand after mixing, the better and clearer will be the varnish. If the color is objected to, the same amount of bleached lac may be used in place of the shellac.

The negative, being drained after washing, is placed in the mixture and rocked just as if the solution were a developing or fixing bath. After about fifteen minutes' soaking, the negative is taken out, the glass side is wiped dry, and the plate is then set aside to drain and dry in the rack. If the negative has been allowed to dry before varnishing, the water varnish may be painted on with a soft brush. None of the troubles associated with hot varnishing will be met with, and a good hard and lasting coating will be the result.

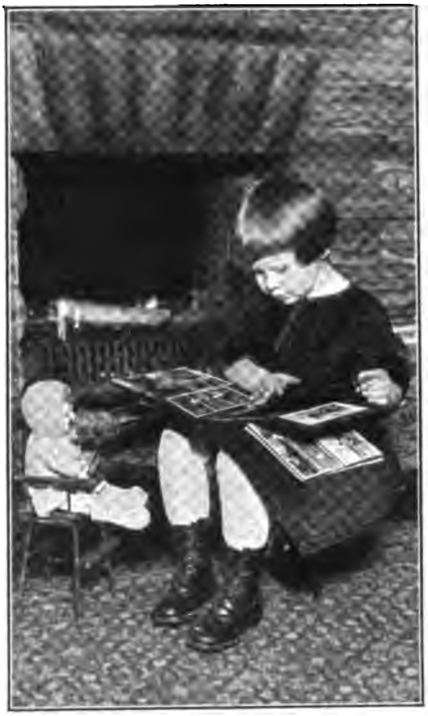
Lately I have been in favor of specially treating the film with tannic acid and alum, in order to make the film tough and parchment-like, the following bath being used for the purpose:

Alum	1 oz.
Tannic acid	½ dr.
Water	8 oz.

The negative is washed well after fixing, and immersed for four minutes — no longer — in the above mixture, the dish being rocked all the time so as to insure uniformity in action. The negative appears to darken a little and become more brilliant, and the film glass-like to the touch. It is then washed for a quarter of an hour and dried as usual. If the negative is allowed to remain longer in the bath the film may buckle at the edges and perhaps leave the glass support. The solution may be used over and over again until exhausted, and the film is made so hard that water may be poured over the surface and wiped off again without injury.

INTERESTED

We are glad to have an opportunity to reproduce the winning picture in the March competition organized by John G. Marshall for users of Meteor Flash powders and cartridges and Meteor Photo Chemicals. The winner in this March competition is Mr. R. A. Barber of Elyria, Ohio, and his picture, though not, perhaps, strikingly original as regards subject and arrangement, is an excellent one both technically and pictorially. It is a very delightful genre study of a little girl looking at pictures with her toys and dolls close at hand. The subject is one that has been used often but it has been handled very well in this case, and the lighting is good.



INTERESTED R. A. BARBER
First Prize, Marshall March Competition

MAKING ENLARGEMENTS

To begin with, one must have a good sound lantern, with a condenser that will cover the plate; not necessarily an elaborate one, but one that is strongly made of seasoned wood, does not leak at the corners, and whose illuminant is optically centered. A special enlarging objective is neither necessary nor desirable because any good quarter-plate lens of not more than 5½ inches will do all that is required. As the lens has no rack and pinion, it is preferable to have a rackwork frame on the lantern itself, in order to facilitate focusing. It is possible, of course, to merely rely on the sliding telescopic tubes generally fitted in the cheaper patterns; but fine adjustment with these alone is almost impossible, so that the slight extra cost of the rackwork on the lantern is well worth having.

My own lantern has merely the base fitted thus, as I use an ordinary quarter-plate lens, which happens to be a good one. The condensers also should be good, though I don't fancy condensers vary so much in quality as they are supposed to do, but they should be fairly free from bubbles.

The illuminant for those who have no electricity is a knotty problem. Those who have gas of course can do no better than rely upon the incandescent mantle; the ordinary upright pattern is the most used. It gives an excellent light, but has the un-

[illegible]

[illegible] or less con- [illegible] the paper and [illegible] the size of en- [illegible] must be remembered [illegible] constant so long as one [illegible] same [illegible] paper [illegible] vary consid- [illegible]

[illegible] enlargement affects the exposure to a very great extent. For example, if a quarter-plate negative enlarged to a whole-plate requires fifteen seconds, it would require half as much again if enlarged to 8 x 10, and double if enlarged to 10 by 12.

It is always advisable to make a note of the exposure and degree of enlargement, together with the brand of paper used for each negative and to keep it as a reference for future use.

In the development of an enlargement several important things have to be observed, for example the kind of developer to use, the amount required, the method of using it.

Amidol, metol, [illegible] are all suitable in their way, but [illegible] and the most useful for all [illegible]. There are so many good formulae [illegible] published that it would be superfluous [illegible] here. Every maker [illegible] list. Nevertheless, whatever [illegible] is adopted, it should always be [illegible] at first, for amidol is useless when [illegible] and an old bottle of the chemical [illegible] lost for months. There [illegible] about its dispensation, and [illegible] necessary are a small quantity of sulphite of soda and a little potassium bromide.

It will keep in solution and remain good for four days, after which it turns pink, and loses its power as a developer.

Rodinal is very useful as a single-solution developer in the concentrated form, to which it is only necessary to add water to form a working solution.

It does not, however, produce such a rich tone as amidol, but for some subjects of a delicate nature it is admirably suited.

Whatever developer is selected, a sufficient quantity of it should be used, in order to cover the paper in the dish; otherwise it will not flow evenly over the surface, and patches caused by uneven development will result.

Six ounces of solution should be used for a 10 by 12 enlargement.

The paper, when taken from the easel or screen, should be laid carefully in the dish, and then flooded with water, or even slid into the water which has been previously placed there.

Air bubbles are often a source of annoyance, and therefore large sizes of paper should be allowed a full minute to soak before pouring on the developer.

As so many workers find it exceedingly difficult to judge when development is complete by red light, pains should be taken to see that there is plenty of it. In fact, it is an absolute necessity to have good light to work by when developing enlargements.

There is no risk of fogging the paper if good quality ruby glass is used. The image should be developed fully, and then held up to the light, and its density judged by looking through the paper. The fixing bath has a slight tendency to darken the image, thereby increasing the contrast, so that development should not be carried too far. — G. E. C. Morris.

COPYING AND ENLARGING IN ONE OPERATION WITH A BOX CAMERA

Copying a photograph is usually accomplished either by buying a special camera with a special lens or by paying a professional to do it. Both courses are expensive to those whose "hobby-money" is limited.

My copying is done with a box camera at a cost of ten cents and a little ingenuity.

A piece of ground-glass was purchased of the standard size of the plates taken by the camera (quarter-plate) at a cost of fourpence, and this was fitted into the space in the camera usually occupied by the first plate. The lens was simply one of the focusing lenses of a five-shilling magic lantern, temporarily fixed on to the front of the camera by a piece of plasticine. Having fixed the lens on to, and the ground-glass into, the camera, the head was focused upon the ground-glass in the ordinary way. In the writer's case the image was in sharp focus when the camera was about 3½ inches from the subject. The exact position of the camera was then marked, the ground-glass removed and a plate inserted, the camera returned to its former position, and the exposure made.

The exposure given must vary, of course, with the intensity of the light; but in the particular case in question the exposure was two minutes indoors on a dull day. A window was on one side at a distance of about eighteen inches from the original, while a reflector was arranged on the opposite side. Contrary to my expectation, the lenses used appear to have good covering power except at the edges; but in the case of a portrait, a little falling off near the edges is unimportant.

It will readily be seen that this method may be of much use to those who have a lantern from which the lens can be temporarily removed. They may have photographs which they value, but in which the faces are rather small, and they would like perhaps one face enlarged and made a picture of in itself but cannot afford the expense of a proper camera or the cost of having the work done by a professional photographer.

It is possible also to enlarge to a respectable size with a box camera photographs of small flowers, living creatures, valuable postage stamps and knick-knacks, which in the usual way may be insignificant when seen on a small plate and among a lot of others.

The method, of course, is not limited to a camera with a single lens. A friend of the writer, having a magazine camera with a rapid rectilinear lens tried the objective from another lantern with equal success. — *Photography.*

MEASURING FOCAL LENGTH

From time to time we are asked for a simple method of measuring the focal length of a lens. We can do this by taking advantage of the fact that the shift in focal planes from infinite focus to the focus for equal size is equal to the focal length of the lens.

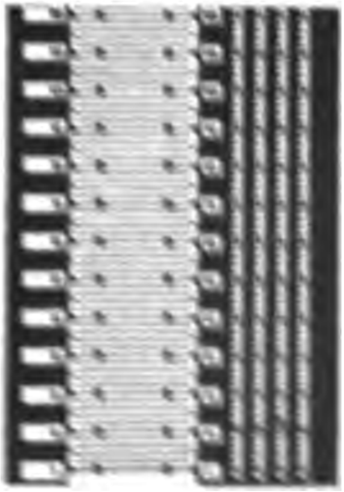
The best camera to use for this test is a view camera that has considerable bellows extension and, for the infinity focus, select some quite distant object, such as a church steeple or anything that has distinct lines to focus on. Make a mark on the camera bed showing the position of the back standard of the camera and then, without moving the position of the front standard (the one carrying the lens), re-focus on a card on which is drawn a target of some definite size smaller than the size of the plate. The inch markings on a graduated ruler would be very suitable. Whatever is selected, focus it very accurately till the groundglass image is exactly the same size as the object focused. Mark the position of the back standard again and the distance between the two marks is the exact focal length of the lens. It makes no difference where the optical center is located, whether it is between the glasses, in the glasses or entirely outside the lens itself. The attempt to measure focal length from the optical center of the lens necessitates the use of supplementary apparatus to locate this point accurately. Attempts to check up the manufacturer's speed ratings usually fail because the actual focal length of the individual lens must be found and lenses are very seldom listed quite accurately. Even with the most careful workmanship, there is a variation from the focus listed that may be as much as about three per cent. Equally important is the necessity for accurate measurement of effective aperture diameter which must be used in connection with the measurement of focal length to get the stop diameter correctly. The actual diameter of stops is correct only on single lenses with the diaphragm in front of the lens.

To copy a sepia print and produce a negative with good contrasts and correct values is not a task for a ray filter. It is much better to use a panchromatic plate without any filter at all.

THE PHOTOGRAPHIC REVIEW

E. J. Wall, F. C. S., F. R. P. S.

The Eder-Hecht Wedge Photometer. — Eder, of Vienna, has issued a little pamphlet, which is a reprint of a paper read before the Photographic Society of Vienna, describing a new form of photometer, or as we should call it, sensitometer, based on the neutral grey wedge, described by Goldberg in 1910. The wedge is prepared by mixing some finely ground lampblack with gelatine solution, and brought to neutrality in color by the addition of red and yellow coloring matters or dyes, the colored gelatine is cast on to plate glass, formed into a small trough by little pieces of glass at the edges, and supported at a very low angle so that the gelatine runs into a wedge form. According to the quantity of coloring matter, and the inclination of the glass, varying degrees of density are obtained in the wedge length, and this increase of density is called the "wedge constant", the constant chosen by Eder is 0.401 per centimeter. The wedge is coated with celluloid varnish and has a protecting celluloid cover on which is printed a scale in black and dusted with bronze powder so as to be quite opaque. The scale is marked in millimeters and every 1 mm gives an increase in speed of a plate tested therewith of 1.101 times. The general appearance of the sensitometer is shown in the accompanying figure, from which it will be seen that on the right hand side are narrow strips marked respectively R, [illegible] and B, and these are strips of dyed gelatine transmitting certain spectral regions. R is a red transmitting about [illegible] of the light from wave-length [illegible] to the extreme red. [illegible] light in all. The idea of these colored strips is that they will show the color-sensitiveness of ortho and panchro plates. The wedge transmits the ultra-violet to 313. As a standard light Eder recommends the old Hefner-Alteneck amyl acetate lamp at a distance of one meter; or as a secondary standard a 1 c. p. electric lamp run from two dry batteries; or magnesium ribbon, 0.002 g, that is approximately 3 mm, which should be burnt at a distance of 3 meters, by the aid of a bunsen or alcohol lamp. The ribbon should be held on the point of a stout steel needle, care being taken that this does not cast a shadow on the scale. Metol-hydrochinon is recommended as a standard developer with a little bromide. The dry negative is laid on a sheet of white paper and the "Schwellenwert," or "threshold value," or sensitiveness is taken as the last number legible. It will be seen that a difference of 10 degrees is approximately an increase of sensitiveness of 2.5 times. The instrument, which measures 9 x 12 centimeters, can be used for plates, and papers, and various tables are given showing the ratios of the degrees, etc. (*Phot. Korr.*, 1910, 56, 141). This is, of course, nothing more than an elaborated Chapman Jones or Warnerke sensitometer, and while it may be useful for rough and ready testing of sensitive surfaces, it cannot be taken as a scientific test. From the practical point of view the method of taking the last legible number as a measure of the sensitiveness is open to very grave objections, as it does not necessarily follow that this faint light action will represent printable detail in the negative. Noting the thinnest impression or number that will give a differentiation in a print is a far better method, and the same may be said of the densest end of the scale, for one may have a plate that will show 100 as the highest legible number and also have from zero to 20 all of the same density and unprintable, or as showing no difference in a print, and if the numbers from 100 to 90 will not be differentiated, then the effective scale is reduced from [illegible]. The light-sources are also open to grave objection, as not one is at all comparable to daylight. The amyl standard is practically orange and the electric yellow and the magnesium distinctly green and with great excess of ultra-violet and comparative paucity of red. As to the color filters, it is apparent that the quantity of light transmitted varies considerably instead of being reduced to a constant luminosity as they should be and are [illegible] Chapman Jones' tester, so that this with the [illegible] would vitiate the readings when [illegible] ortho or panchromatic plates. Should anyone wish to make such an instrument, neutral [illegible] wedges can be obtained from the Eastman [illegible] and also the color filters. Practically [illegible] corresponds to the red, [illegible] green and [illegible] filters [illegible] tricolor filters [illegible] the use of these [illegible] green and [illegible] sensitive- [illegible] For those who [illegible] Goldberg's [illegible] and will be [illegible]



[illegible] — The [illegible] making a [illegible] from [illegible] to have an [illegible]

PLAIN PAPER. — L. Reicher gives the following method of making plain or salted paper. Well-sized paper may be used, or any paper may be sized with:

Arrowroot	2 g	1.55 gr.
Water	1000 ccm	16 oz.

Make the arrowroot into a thin cream with a little of the water and add with constant stirring to the remainder of the water, which should be boiling. Boil for five minutes and allow to cool. The paper can be floated on this for several minutes and then hung up to dry. When dry paint with the following:

Cupric chloride	18 g	138 gr.
Gum arabic	18 g	138 gr.
Water	1000 ccm	16 oz.

To this may be added a few drops of 2½ per cent solution of potassium bichromate; the more of this used, the greater the contrasts. The paper should be again dried and then painted with or floated on:

Silver nitrate	128 g	983 gr.
Citric acid	58 g	445 gr.
Gum arabic	4 g	31 gr.
Water	1000 ccm	16 oz.

Dry rapidly. After insolation the print should be washed and toned in a borax gold bath, and fixed in 10 per cent hypo (*Lux*, 1919; *Phot. Welt.*, 1919, **33**, 11). The addition of copper salts to printing-out emulsions slows the paper enormously and gives very harsh contrasts. Nickel and uranium salts act in the same way.

PRINTING OUT TRANSPARENCIES — P. Hanneke recommends the following for making lantern slides and transparencies or opals:

Gelatine	85 g	595 gr.
Water	810 ccm	13¾ oz.

Allow the gelatine to soak for 30 minutes, melt in a water bath at 50° C. (122° F.), and filter through linen. The glass should be rubbed over with a 1 per cent solution of sodium silicate and dried. To the gelatine solution add:

Salt, pure	5.5 g	42 gr.

Then add:

Silver nitrate	38.36 g	268 gr.
Water	190 ccm	2¾ oz.
Citric acid	8.2 g	57 gr.

Heat the mixture to 50° C and filter through linen and then coat the glass (*Phot. Chron.*, 1919, 30). The trouble with all printing-out formulas for glass is that unless one has a special registering printing frame, it is very difficult to judge of the depth of printing, and this must be very deep for lantern slides, or else the image is wanting in density when projected. The only advantage is that the image appears more like a stain than a silver image, as the grain is so fine; but as equally good results would be obtained by using one of the ordinary developed chloride emulsion plates, there is not much real gain.

CYANOTYPE OR BLUEPRINTS — "Anon" points out that with ordinary blueprint or ferroprussiate paper the shadows are heavy, and there is general want of gradation in the print. If, however, the double transfer paper used in carbon printing, or any other gelatinized paper, be used, much better results are secured. A usual formula for the sensitizer is:

Iron-ammonio-citrate, green	150 g	115 gr.
Water	1000 ccm	16 oz.
Potassium ferricyanide	35 g	269 gr.

Apply with a brush and dry as rapidly as possible (*Il. Prog. Foto.*, 1921, 244). As this paper is used generally for line work, such as plans, the want of gradation is of no moment, in fact is an advantage. The idea of using gelatine is not new and dextrine has also been suggested; but does anyone want to print an ordinary negative in cyanotype? A blue image is wanted in three-color work, but then the simplest way is to make a black silver image and tone with a cyanotype mixture.

IRON MORDANTING FOR DYE-TONING — J. I. Crabtree has patented the use of colloidal ferric hydroxide as a mordant for dyes in images. Practically he converts the silver image into the usual cyanotype blue image by first forming silver ferrocyanide and toning blue with iron alum and bromide, or direct by iron alum and ferricyanide. The ferric hydroxide is obtained by the use of an alkaline carbonate or caustic. The alizarin dyes in acetic or ammoniacal solution are specially suitable (*U. S. Pat.* 1,389,742, 1921). This rather recalls Lewishon's patents (1,071,559, 1913 and 1,126,495, 1915), in which a cyanotype image was obtained, dyed and treated with silver nitrate. In this case basic ferric nitrate and silver ferricyanide would be obtained. But Lewisohn recoated three times with the cyanotype mixture for the three colors. S. J. Carter (*Brit. J. Phot.*, 1898, **45**, 445) used the cyanotype process with subsequent treatment of the image with caustic alkali to form ferric hydroxide and dyed up with the alizarins, for obtaining colored prints on fabrics. As the hydroxide was treated in this case with sodium phosphate there was probably also some ferric phosphate formed, and this increased the brilliancy of the prints. For those who want to ornament household linens and fabrics, Carter's process is well worth attention:

Potassium bichromate	0.025 g	0.175 gr.
Iron alum	1.25g	8.75 gr.
Oxalic acid	2 g	21 gr.
Potassium ferricyanide	1 g	7 gr.
Ammonia alum	5 g	35 gr.
Hydrochloric acid, 10%	1 ccm	1 minim
Water	1000 ccm	16 oz.

Immerse the fabric for 3 or 4 minutes and dry, print and wash and then treat with caustic, phosphate and dye. F. Dommer (*D. R. Pat.*, 114,923, 1899) patented the use of iron nitroprusside and subsequent treatment with alizarin and other dyes.

AUTOCHROME EXPOSURES — C. Schitz has used the Imperial exposure meter for determining the duration of exposure for autochrome work and has found, assuming the H. & D. speed of the plate to be 2.5, about one-sixth of an ordinary plate, that at *f*:7 the exposure is exactly the time required for the paper to darken to the standard tint. This method is, of course, applicable to other makes of exposure meters, in which sensitive paper is used, as one has merely to place any number on the movable scale in any position, read off the time against 2.5 and find the diaphragm number corresponding to the same. Schitz uses supplementary Wratten K-1 filter for one-fourth of the exposure (*Bull. Soc. franc. Phot.*, 1921, **68**, 321).

A NEW PROCESS OF COLOR PHOTOGRAPHY — Under the above caption L. P. Clerc describes briefly a process patented by L. Didier, the inventor of the pinatype process, for obtaining color prints from autochrome negatives, that is unreversed autochromes, which obviously are negatives in complementary colors, on a sensitive film or several films, so that there is formed at each point a complementary color to that in the negative, so that the print is in the colors of the subject. The inventor sets forth the conditions to be fulfilled as follows: the three series of reactions, each corresponding with the production of a primary color, should be chemically and optically independent; fixation should be possible for the three sensitive films by a single reagent, or at any rate, by reagents which can be mixed together. The leuco compounds of certain dyes alone, or in a mixture with other substances, are sensitive particularly to rays complementary to the colors which the compounds assume on exposure to light. For the production of yellow, other reactions may be employed, taking place only under the influence of the blue-violet rays. Fixing is to be effected in a solution of monochloracetic acid with addition of stannous chloride (*Fr. Pat.* 924,143, 1919; *Brit. J. Phot.*, 1922, **69**, 16; *Sci. Tech. Ind. Phot.*, 1922, **2**, 12) In the face of this meagre abstract it is impossible to form an accurate judgment of the process. But as regards novelty one may be permitted to generally question it. Meister, Lucius & Bruning (*D. R. Pat.* 160,772, 1904; *Eng. Pat.*, 4,994, 1904) introduced a process, which they called pinachromy, in which leuco, or colorless, bases of dyes were suspended in collodion and sensitized with nitro-mannite, etc., which acted as a catalyst. The leuco compounds of setocyanin for blue, of rhodamin for red and of flavanilin for yellow were used, and monochloracetic acid as a fixing agent. It is true that in pinachromy three separate sensitive surfaces were used, that is to say, after the one image was obtained a second coating was applied, and then the third, with an insulating coat in between each layer. Didier applies the sensitive compounds in three separate layers before printing, using insulating coats. It must be remembered at this date, 1904, there was no call for a one-film sensitive surface, as there was practically no screen-plate available, the Joly-McDonough being dead. The process was withdrawn, as the results were not permanent in light.

THE ACTION OF SOLUBLE IODIDES ON PLATES — F. F. Renwick points out that an exposed plate may be treated with:

Sodium or potassium iodide	10 g	77 gr.
Sodium sulphite, dry	10 g	77 gr.
Sodium or potassium sulphocyanide	30 g	221 gr.
Water	1000 ccm.	16 oz.

It is then possible to develop in a strong white light by the use of:

Amidol	5 g	20 gr.
Sodium carbonate cryst.	100 g	1 oz.
Sodium sulphite, dry	50 g	½ oz.
Water	1000 ccm	10 oz.

The sulphocyanide in the iodizing bath may be replaced by a like quantity of hypo, if the plate be not exposed to white light before development. The addition of formaldehyde, sodium acetate, etc., is advantageous as hardening agents, to prevent the softening action of the sulphocyanide, and an addition of 1 to 2 per cent of potassium bromide preserves the delicate half-tones. The solution should be used at 13° to 15° C. (55° 59° F.) Other developing agents, except hydrochinon, may be used, but the above is the best, and development takes about ten minutes. Renwick found that the iodizing bath made the silver salts strongly red-sensitive, as did a 1:2000 to 1:10,000 solution of potassium cyanide (*Phot. J.*, 1921, **61**, 12). Renwick (Hurter Memorial Lecture, *J. S. C. I.*, 1920, **39**, 156 T) gave a very good and exhaustive summary of the action of iodides on silver bromide emulsions with a very complete bibliography. Poitevin, in 1859, used the desensitizing properties of potassium iodide to obtain positives direct in the camera. R. Freund (*D.R. Pat.* 213,775, 1908) patented the "Aktinla" process for developing in white light by treatment of the exposed plate with 4 per cent of iodide, but this was not a success, because he used an unsuitable developer.

RED SENSITIVENESS WITH IODIDE — Renwick's note, see above, as to the action of iodide in giving red-sensitiveness called forth a statement by R. B. Archey (*Phot. J.*, 1921, **61**, 235) that this phenomenon was met with when making emulsions for positive cine work, when an unusual amount of iodide was accidentally used; and I have met with it under like circumstances even when quite small quantities of iodide are used; it would seem to be dependent on the particular method of making the emulsion. S. E. Sheppard has examined many commercial plates, exposing them in the spectrograph before and after treatment with iodide, and finds that the action is entirely specific, and confined to particular makes of plates (*Phot. J.*, 1922, **62**, 88).

METOL POISONING — B. Hollins states that he has been a martyr to this trouble for many years and has at last found a remedy, after trying "every ointment and treatment, including the medical baths at Harrogate, without any result." A solution of 4 oz. of carbonate of soda in 20 oz. of boiling water is made, and the hands placed in the same for 15 minutes, or until the water becomes cool, and all the itching of the skin disappears. The hands are then thoroughly dried and the following ointment well rubbed in:

Ichthyol	10 gr.
Lanoline	40 gr.
Boric acid	40 gr.
Vaseline	30 gr.

This should be applied well three times a day. When using metol-hydrochinon developer a dish, containing 20 drops of hydrochloric acid to 20 oz. of water, is placed alongside the developing dish and the hands immersed therein before and after development (*Brit. J. Phot.*, 1922, **69**, 71).

FLASHLIGHT BURNS — The same writer, Hollins, states that through the slipping of a flashlamp he had his hand and arm terribly burnt, and being some miles from a hospital he was taken into a farmhouse, where the farmer's wife applied a cold poultice of 3 or 4 ounces of carbonate of soda grated with raw potato. The pain went in five minutes and there was no further trouble. The poultice was kept on for two days and then the parts smeared with zinc ointment until the skin healed, which happened in a week (*Brit. J. Phot.*, 1922, **69**, 69).

This is a very old household remedy, which recalls childhood troubles with fireworks. The best remedy for burns, and scalds, is the prompt application of 10 per cent solution of picric acid. The pain disappears almost immediately, and repeated application and keeping the parts wet will soon heal them up. The only disadvantage is that the skin is temporarily badly stained.

A NEW ULTRA VIOLET ABSORBENT — F. F. Renwick demonstrated the action of a new filter for absorbing the ultra-violet, made with acetaminoquinolin. This is a colorless compound and with but little fluorescence, and has a more complete absorption (*Phot. J.*, 1922, **62**, 111). Aesculin has always been the absorbent hitherto used for this purpose, and it has the disadvantage of being very expensive, fluorescing very strongly, and rapidly turning brown on exposure to light. It can only be properly dissolved with the aid of ammonia, and it came almost entirely from Germany. Kopp & Joseph (*D. R. Pat.*, 253,334, 1911) claimed the use of coumarin derivatives containing hydroxyl, amino, carboxyl or benzol rings as ultra-violet light absorbers. The manufacture of acetaminoquinolin is described by Miss Hamer (*J. Chem. Soc.* 1921, **119,** 1433).

DEPTH DEVELOPMENT — O. Mente wrote to Lüppo-Cramer that when using the safranin desensitizing process with some commercial orthochromatic plates, of the non-filter type, he had found that no image appeared on the face of the film, but that a vigorous one could be seen next the glass. Lüppo-Cramer has looked into this matter and finds that when tartrazin and pinasafrol, tetramethylsafranin, are mixed together in certain proportion they arrest development on the surface, and this particularly occurs if 1 per cent of bromide be present in the developer (*Phot. Ind.*, 1921, 1023). In a later communication Lüppo-Cramer returns to this subject and finds that with emulsions dyed with tartrazin, some combination is formed with safranin, which prevents the penetration of the latter into the gelatine and therefore the desensitizing effect is not produced. Filter yellow (*Hoechst*) has not this effect and is the better dye to use for making self-screened plates (*Phot. Ind.*, 1922, 27). This is only the second time that depth development has been noticed, the first being with Balagny's amidol developer, made with sulphite neutralized with sulphite lye (*Bull. Soc. franc Phot.* 1912, **59**, 289; *Brit. J. Phot.*, 1912, **59**, 783,804).

A NEW (?) DESENSITIZING PROCESS — H. Bossel describes his new process of daylight development, in which safranin and some aniline dyes are mixed with the developer, and the plate transferred by means of an opaque cloth to the tray in daylight; then, after about one minute, the development may be watched by daylight. Bossel is careful to give the chemical name of the Hoechst dye he uses, the sodium salt of naphthionic acid and beta-naphthol and disulphonic acid (*Phot. Ind.*, 1922, 72). This is nothing more than a reversion to the old coxin and like processes (See This Journal, 1921, 651) plus safranin, as the above long chemical term is merely descriptive of crocein scarlet, or fast red, or azorubin.

THE TRIADOCHROME COLOR PROCESS — J. F. Shepherd has introduced, under this name, a process of printing from the usual tri-color negatives. The red print is made by the carbon process on a celluloid support. The blue print is made on transfer bromide paper, or toned by the usual cyanotype method and fixed in a special bath that gives it the correct blue-green shade. It is then squeegeed into contact with the red print and after about an hour the paper stripped off, leaving the red and blue impressions on the celluloid. The yellow impression is made on ordinary bromide paper and toned yellow by a special combined toning and bleaching bath. This in turn is squeegeed to the blue plus red print and the whole allowed to dry, when the celluloid can be stripped, leaving the colored result on the paper. A small test chart of red, yellow and blue with white is provided and is included in every negative, and thus in making the prints the operator has a standard to work to (*Brit. J. Phot.*, 1922, **69**, *Col. Phot. Supp.*, **16**, 8).

IRON AND URANIUM TONING — A. Cobenzl suggests that to preserve the whites of the pictures in these processes, the silver images should be bleached in a weak ammoniacal ferricyanide bath, well washed and then toned in a solution of ferric chloride or uranium nitrate, slightly acidified with hydrochloric acid. A one-solution uranium toner consists of:

Uranium nitrate or acetate	0.5 per cent.
Potassium oxalate	1 per cent
Hydrochloric acid c. p.	1 per cent
Potassium ferricyanide	0.2 per cent

Then well wash for a short time (*Phot. Rund.*, 1921, **57**, 219)

The research laboratory of *Il Progresso Fotografico* recommends the following for permanent brown or red tones, particularly for sketch portraits:

Uranium nitrate	0.4 per cent
Nitric acid, c. p.	0.5 per cent
Potassium ferricyanide	0.5 per cent

Rinse and fix in:

Hypo	10 per cent
Sodium acetate	5 per cent
Glacial acetic acid	2 per cent

Finally wash (*Il Prog. Foto.*, 1921, **28**, 141). The method of using an ammoniacal ferricyanide bath and subsequent treatment with the metal, as suggested by Cobenzl, was given by Namias in 1891, and has been repeatedly recommended; the use of the oxalate was suggested by Sedlaczek in 1906.

ARTIGUE OR VELOUR PAPER. — This paper, which about 1894 was all the rage in England, is practically a gum-bichromate paper, and the following method is given of preparing the same, the results being, it is stated, very much like platinum paper:

Gelatine	20 g	155 gr.
Water	1000 ccm	16 oz.

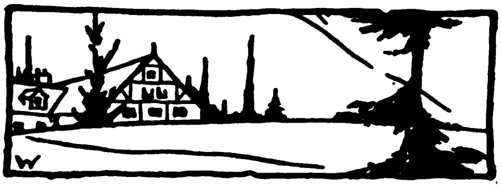
Allow to swell in the water and then melt by heat and add:

Sugar	20 g	155 gr.
Golden syrup	40 g	310 gr.
Honey	10 g	77 gr.

Filter, then add:

Lampblack	335 g	6 oz.

This must be rubbed up into a thick cream with alcohol. This should be painted over the paper till the white surface can no longer be seen, and then dried. It will keep any length of time. Before printing the paper must be sensitized either by painting the back freely with a saturated solution of ammonium bichromate in alcohol, or it may be floated on the same for a few minutes. Drying is very rapid. Development can be done by floating the paper face downwards on water, or by spraying, or as in the original process by making a thin cream of boxwood sawdust with water and pouring over the print. Fixation is effected by immersing the print in cold water, or preferably in 9 per cent alum solution and washing until all the yellow color of the bichromate disappears (*Phot. Ind.*, 1922, 50).



QUESTIONS and ANSWERS

Graflex Fittings.— A. T. says — "In your booklet "How to choose and use a lens" you say that near-sighted people can have the hood of the reflecting camera fitted with special spectacle lenses. I intend to buy a 4 x 5 Revolving Back Auto Graflex and I would be very much obliged to you if you would tell me where I can have the hood fitted with practical achromatic magnifiers. I would also like to know where I can have my camera fitted with a practical swinging front." *Answer* — We think that any practical oculist could fit the hood of your reflecting camera with achromatic magnifiers. We do not know of any firm who could fit your camera with a swinging front, unless the Eastman Kodak Company would undertake to do it. The only reflex camera we know that possesses both these features — the magnifiers in the hood and the swinging front — is the "Minex" made by Adams & Co. of London.

Retouching. — G. M. wants to know (1) is it proper to make the strokes in retouching fine and close together the entire length of the freckle or (2) is it proper to fill the freckle in solid with small touches 1-32 of an inch in length? (3) is it possible to make the touches too short in length? (4) how can one tell the greatest length of focus one can use for standing figures and groups in various size rooms? (5) what is the address of the Conley Camera Company? *Answers* — The strokes in retouching must be so fine and so lightly and delicately made that they do not show at all as definite strokes. The aim is to work over a light area such as a freckle in such a way that the pencil marks do not show at all as definite strokes but the light area is made to match the surrounding parts and thus does not show at all as an area of different tone. For small freckles, often one touch is all that is required, larger ones may need several strokes, dots, commas, lines, or whatever they are, with the pencil, before they will blend with the surrounding areas and disappear. But the stroke must never be made so that it shows as a definite line, dot, comma or anything else. The effect of the pencil work is what you want. Go easy at first and try to avoid doing too much. The British Journal Almanac (obtainable from George Murphy, Inc., 57 East 9th Street, New York City) gives all kinds of useful tables for calculating length of focus, length of studio, height of figures, etc. The price of this is $1.00 in paper covers and $1.50 bound in cloth. The Conley cameras are now sold by Sears, Roebuck and Company. They still use the same name, but the Conley Camera Company is out of business.

Glycin. — A. V. B. P. sends the following question — "In Beginners' Troubles, page 59, you give a Glycin formula for stock solution. Please give me dilution for use in 2½" Eastman tank for 20 minutes development at 65 fahr. *Answer* — The following Glycin formula is calculated to develop in about 40 minutes at average temperatures, and if you will halve the quantity of water, it will probably develop in about twenty minutes at sixty-five, although it may run up to twenty-three or twenty-five.

Glycin	1 g	5 gr.
Boiled or dist. water	1000 ccm	10 oz.
Sodium Sulphite cryst.	5 g	22 gr.
Potassium Carbonate	7.5 g	33 gr.
Potassium Bromide 10%	10 drops	3 drops

Develop 40 minutes at 18°-22° C. (64°-72° Fahr.)

The Ansco tank developing formulas published in the April issue may interest you.

Developing Tanks. — F. C. W. wants to know whether it is practical to make vertical film tanks for the development of roll films, of metal coated with shellac. Would some other coating be more suitable? Would a tank made of cypress or sequoia be satisfactory? *Answer* — Probably the metal tanks coated with shellac would answer the purpose very well, but the shellac would need to be renewed frequently. Asphalt paints are much better. Nickel plating is the most satisfactory coating for metal to be used for such a purpose. Certainly a tank made of cypress or sequoia would be satisfactory, provided it could be made in such a way as to be watertight. We have used tanks made of ordinary soft, white pine and they have answered the purpose very well.

Exposure. — B. W. M. writes — "I have your celluloid Exposure Meter and I am doing some home portrait work. Does that indicate exposures indoors, different rooms, different light? If so, please send one or two examples. In February issue, page 70, we see a printing box, two bulbs besides the ruby pilot light. I would like to know how deep, how far ground glass is from bulbs so as not to heat. Do the two bulbs stand up like the ruby bulb or lie flat? *Answer*—On the Exposure Disk there are three numbers given for home portraits and this is because the light conditions vary so much in different houses. You should use either 8, 9 or 10 according to whether the conditions are good, medium or poor. The time of exposure might vary from 1 second up to 8 or 10 seconds. Let us suppose we are making a portrait in March, between 10 and 2, bright light (column for hour and month being set against light conditions). We are using Eastman Speed film (speed number 1). Putting 1 against 8, we see that the exposure for stop *f*:8 is one half second. A speed number of 9 gives one second and, using speed number 10, the exposure is two seconds. These different times are to allow for different conditions, such as bigger windows, open outlook, etc. In the printing box referred to on page 70, February issue, the bulbs should be placed about one third of the way up from the bottom, they are lying flat, not upright like the ruby light.

Cinematography. — A. E. A., asks us to recommend a good practical book on cinematography for beginners at a reasonable cost and he also asks if we know of any publication on photographing special objects such as glass and papers with glossy surfaces. *Answer* — "Practical Cinematography and its Application," by F. A. Talbot, is a good, non-technical book for beginners. Its price is $1.50. As regards photographing special objects, such as glass and papers with glossy surface, the only good book we know of that treats of these things is "The Commercial Photographer" by G. L. Rose. Price $4.00. We can supply you with these books, if you like, or you can probably get them from any good book concern in Philadelphia.

Duratol. — N. P. P. writes — "Before the war I used to get from my dealer here a developer called Duratol and I also had the pleasure of receiving several letters from Dr. Malcolm Dean Miller regarding it. My dealer now says that he cannot get it. It is the only developer that I have used that did not oxidize rapidly. I have an Ica Model A and I make no contact prints but enlarge what I want to keep and in making up, say, a dozen enlargements, it takes about three hours. I have been using Eastman tubes and for some reason the developer turns a dark brown in about two hours and than I get a stained print. Will you kindly suggest a substitute for Duratol. I would also like to know who handles 6½ x 9 cm panchromatic plates." *Answer* — Duratol was a German product. There is none of it to be had now, nor is there anything exactly like it. Don't you think it is rather poor economy to use the same developer for too many prints? There are many good developers for enlargements: the Eastman tubes you have been using are as good as anything. If you make enlargements often enough to make it worth while, why do you not mix a stock solution of M-Q developer and then use some of it for about four enlargements and fresh developer for the next four and so on? We think almost any photographic concern like Eastman Kodak Co., Burke and James, G. Gennert or George Murphy, Inc. could get for you any standard plate cut to any size you wish. You should be able to order 6½ x 9 cm. plates through your local dealer.

A USEFUL ADDITION TO THE THERMO DEVELOPMENT CARD

Thermo Development. — C. L. G. of Union, N. Y. writes us that although he uses the Thermo Development Card with uniform success, he has never made up the solutions as given on the card. Instead, he weighs out the proper quantity of the different chemicals and makes up a solution in that way each time he wishes to use it. He finds that this is the best way for him because, as he works very intermittently, there may be a long time between developments. He has worked out a table which we give below and which he thinks would be a good thing to have printed on the card in addition to what is now there. By using freshly mixed developer, he is sure of uniform results, no matter how long a time may elaspe between working periods. The quantities are for 30 ounces, for tank development, and it would be a simple matter to adjust these quantities for a greater or lesser quantity of developing solution.

FOR 30 OZ. TANK DEVELOPMENT

	VVQ	VQ	Q	MQ	M	MS	S	VS
Metabisulphite	1.68 gr.	2¼	3	4	5	6.8	9	12
Metol	0.84	1⅛	1¼	2	2¼	3.4	4½	6
Hydrochinon ..	2.52	3⅜	4¼	6	7½	10.2	13¼	18
Sod. Sulphite ...	12½	16½	22	28	37	50	66	82
Sod. Carbonate	18¾	24¾	33	42	55	70	99	123

(Eikonogen may be substituted for metol.)

(Hydrochinon and metol [or eikonogen] equal parts, seems better.)

Photographing Micro Objects — E. S., Stainauer, Nebr. writes — I am unable to obtain a book on dry collodion (negative photographic) plate making for photographing micro objects etc., and wish to know if you can obtain this book for me or give me the name and address of publishers. Also gives names and addresses of the following manufacturers: — photographic gelatine, unsensitized photographic baryta (glace) papers, dyes for color sensitizing plates, lenses, achromatic, from ½" to 1¼" focus. *Answer*. For photographing micro objects wet collodion should be used rather than dry. It is not possible to obtain a fine enough grain on dry collodion. Photographic gelatine may be obtained from any large dealer like Gennert or Willoughby. The gelatine used in the kitchen is exactly the same as that used in photography. Baryta papers cannot be obtained from anyone at present time. For dyes for color sensitizing plates apply to Eastman Kodak Company, Research Department. We believe the Goerz Optical Company have recently put a lens of ¼" focus on the market.

Paper Negatives. — J. S., Chicago, Ill., writes as follows — In order to use a slow paper for contact printing on an enlargement, I wish to enlarge on bromide and then make a negative by contact on a plate or film. Which brand of bromide paper is the best for this purpose to bring out finer details and shadings in a landscape? And which brand of plate or film is used for contact exposure? I should prefer one of the Eastman Professional films, e. g. their portrait film, to a plate. *Answer*. There is a very thin brand of P. M. C. which, if it were treated with castor oil or paraffin, might make good negative paper, but, unless you have a good reason for working in the way that you suggest, it would be much better to make a small transparency and then enlarge from that on to paper, plate or film. If you try exposing through paper and making a negative by contact from a paper enlargement you will not be able to avoid showing the grain of the paper quite plainly. Eastman Commercial Film has a slow emulsion and tends to give more contrast than the Portrait Film. It requires about four times as long an exposure.

Filter Changing Focus. — K. O. P., New York, has an Ica Ideal A camera and would like to use a color filter with it, however, the filter ordinarily issued with this camera is of the screw-in type and the matter of screwing the filter on and off cannot be accomplished without great danger of scratching the lens, to say nothing of the inconvenience as compared with filters of the slip-on type. Besides, he much prefers a certain filter of the latter type (Wratten). His question is — I have read that filters always change the focus slightly. If I were to use a slip-on filter, the distance from the front of the lens to the back of the filter would be perhaps a quarter-inch greater than if I used the screw-on filter for which the camera seems to be designed. Would this make any difference or throw the focus out in any way, or would it, in any other way, result in the taking of pictures inferior to those taken with the screw-in filter attached? *Answer*. The filter does change the focus slightly because it cuts out a lot of the blue rays and thus the lens is overcorrected for chromatic aberration. But it does not make any difference at all if the filter is a little more distant and the alteration in focus is so very slight that, though it might be perceptible in focusing quite near objects with a large stop, it is practically negligible in general work, landscapes, etc. where the focusing scale is set from ten or fifteen feet to infinity. If you like the screw-in method of attaching the filter but want to use the Wratten filter, why do you not mount the Wratten filter in the screw-in mount (or have it done) and then you could leave it in position and use it for all work.

Reversing the Lens for Enlarging. — G. C., Ft. Wayne, has been having some trouble with his enlarger and writes — You state that my trouble is probably from the light not being centered or from my lens not properly covering. I have already tried to correct these matters but think also my trouble might arise from another cause. The lens I am using is the one already in my camera which is used as enlarger. The lens is a double anastigmat, the Hekla, equipped on Ica camera. It seems I have heard something about the elements of a convertible lens being exchanged when used as an enlarger. My whole lens is speed *f*:6.8, 5¼" focus, rear element 9" focus and front element 11" focus. Should the front element be put in the rear cell and the rear element in the front cell in enlarging? I have been using it without changing. *Answer*. It does not make any difference at all which way the light rays enter a lens and the results are just the same whether the elements are transposed or not. The only instance where there can be any difference is when using a single lens and then the difference is due to the position of the diaphragm rather than to the lens itself. Possibly, if the light you are using is not very strong and you have to give a fairly long exposure, the loss of illumination in the corners of the prints may be due to the light being weaker at the corners by reason of the increased distance from the light source. In the ordinary way, with a strong light, this slight difference in distance makes no perceptible difference and the variation in the strength of the light is taken care of by the latitude in the paper, but, with a weak light, it may be just sufficient to cause a falling off in the corners.

Permanency of Uranium Toning. — G. W. C., Burkburnett, Texas, asks for a formula for toning Azo E for rich brown, he does not like the yellowish brown obtained by the Eastman formula for sepia. He adds — The formula given in April American Photography by A. Coblenz, uranium toning: it seems that Mr. Wall does not think that the results are permanent. Can this bath be modified for good results? *Answer*. Probably the hypo-alum method would give better results with Azo. The color obtained by these processes varies with different papers; some give good results by redevelopment and some do not. You will find a formula for hypo-alum toning in the May issue, page 332. Many people have experimented with uranium toning and all have found that the results are rather uncertain as regards permanency. We cannot tell you whether or not the bath in question could be modified for good results. This would be an excellent opportunity for you to experiment along these lines if you care to.

Use of Thermo Development Card. — D. N. P., Thompsonville, Conn., writes — Thermo Development Chart is received, but as I do not understand it thoroughly, please help out in the following: — Do you have to mix A and B formulas or do you put water to certain amount of A and B? For example, to develop a 5 x 7 Seed 30, how much of A and how much of B will be necessary and whether you will have to put any more water than the amount you put to mix the developer. What do you mean, if the first trial does not give the right printing, to classify the plate one class nearer VS for more or one class farther from VS for less contrast? Where does the following correspond to Watkins Thermo Pyro soda:—

VVQ	VQ	Q	MQ	M	MS	S	VS
1	1¾	1¾	2¼	3	4	9	6¾

drams to be dliuted to make total value 3 ounces for tray? Please make this clear. *Answer*. This is how you use the Thermo Chart — You want to develop a 5 x 7 Seed 30 plate. Make up your stock solutions, say, the modified Thermo M-Q. T. C. 1.9. In one bottle mix up solution A as given on the chart, mixing the chemicals as stated in 20 ounces of water. Make up solution B in the same way, using 20 ounces of water. The plate is classed as MS and, when you are ready to develop, you take 6 drams of solution A and 6 drams of solution B, put them together and add enough water to make the total amount of the developing solution 3 ounces, using water that is of the same temperature as the room in which you are working. That is your developing solution and you next have to find the time of development or the number of minutes it will take for the plate to be properly developed in that solution. You do this by referring to the table of temperatures. If the temperature of the room and of the solution is, say, 72°, you will have to develop for 4¼ minutes, using the three ounces of developer in a tray. You can cover the tray and you need not look at the plate at all. At the end of 4¼ minutes, take the plate out and fix it and it will be properly developed. If you find it is too dense or too thin, that is to say, if it has too much or too little contrast, you should change the development speed letter and call the plate M instead of MS if you want less contrast, and S instead of MS if you want more contrast. You will thus make the developing solution stronger or weaker, stronger for more contrast and weaker for less contrast. For more contrast you take 8 ounces of each stock solution instead of 6 and for less contrast you take only 4½ ounces instead of 6. The total quantity of working developer, however, is the same, 3 ounces. We hope this is now clear to you. If there are any points we have not explained satisfactorily, let us know and we will try to elucidate further.

American Agents for German Lens. — H. C. W. of Brooklyn, N. Y., wishes to know who is the present American agent of the German optical firm of Hugo Meyer, Goerlitz. *Answer*. We believe that the American agents for this firm are Messrs. Ralph Harris and Company, 26 Bromfield Street, Boston, Mass.

One Minute Camera. — M. H., Lanuke, Alberta, wants to get a camera with which pictures can be made in one minute. He wants to find out where such cameras are sold. *Answer*. We believe you would be able to get the kind of camera you are looking for from the Chicago Ferrotype Company, Chicago, Ill.

Chloramine T. — G. W. W., McKeesport, Pa., writes — In the April issue of American Photography there was an article under "Practical Hints" dealing with the removal of hypo after fixing by the use of Chloramine T. I have tried to order this through local druggists but they have been unable to get it; the wholesalers say that they have never heard of it. I will appreciate it if you will inform me where this can be obtained. *Answer.* Chloramine T is sold by the Research Department of the Eastman Kodak Company at five dollars per kilogram. Write them at Rochester, N. Y. for a quotation on smaller quantities.

Value of Second Hand Apparatus. — C. C. R., Rutland, Vt., sends us a letter in which he states — I am writing to see if you can tell me what the value of a Cooke Kodak Anastigmat, *f*:6.3 lens mounted in a Compound shutter is. This is a second hand lens and shutter but both are in perfect condition. This is fitted to an old style 3A Special Kodak. Please give me the value of this combination also, by this I mean the approximate resale value of Kodak fitted with this lens and shutter and also of lens and shutter alone. *Answer.* We have looked up the catalogs of dealers in second hand photographic apparatus and, from the quotations on similar lenses and shutters, we would say that your Cooke lens and shutter ought to be worth $40 or $50 and the camera and lens worth about $75. It is hard to estimate prices on second hand goods because they vary so much according to the demand for that particular type. A certain type of camera or a certain lens and shutter may be all the rage, and prices would naturally be high even for second hand ones. On the other hand, a camera may be of a type of which there are a lot on the market second hand, and that would reduce the price considerably. Write to Willoughby, 110 West 32nd St., New York City, or to Central Camera Co., 124 South Wabash Avenue, Chicago, ask for their catalogs, and then you could compare the prices for yourself.

Making Direct Positives in the Camera. — R. L. R., Fairmont, W. Va. writes — I bought a copy of Woodbury's "Photographic Amusements" to get his dope on reversing negatives. It is too vague; indefinite. Why the wide range of from 2 to 8 minims of thiosinamine? When should the amount be varied? "Ordinary Pyro" developer does not signify anything. There are many such and the chemicals per given amount of water vary considerably. How many ounces of developer is 2 to 8 minims of thiosinamine supposed to be put in? *How much* ammonia will assist the reversal? I made twenty-five tests, varying the chemicals in as many ways, but the results were everything but a reversal. Are the plates to be put through a normal hypo bath or treated otherwise? If you can supplement this article with anything definite or of value or can give me any other formula for reversal, I would appreciate it very much. The formula for reversal in autochrome work does not give satisfactory results for the work in hand. *Answer.* Waterhouse's process of reversal is not always reliable. It is only an amusement or experimental process. It was worked out by him in the early days of the dry plate and no one has thought it worth while to do any experimenting recently under modern conditions. The Positype people have worked out a thoroughly satisfactory method for films coated on paper and the autochrome process can be easily applied to any plate with a thin emulsion. When you get a plate with a very thick emulsion, however, troubles come from the fact that there is not a clear cut image straight through from the top surface of the film to the base, and, consequently, when the first developed image is removed, you have not made a clean removal of all the silver in the affected spots. Naturally redevelopment gives more or less general fog. So you see you must work on a very thinly coated plate which makes it difficult sometimes to get the necessary density.

Fog and Flare When Working Against the Light. — S. S. S., Waverley, Mass., wants to know what type of lens should give greatest satisfaction in working against the light, taking interiors, including the windows, the hardest possible jobs of that sort? I am using a Hecla and, though inclined to blame myself for all the faults my negatives are heir to, still I strongly suspect the Hecla of failing at that job. My negatives look foggy or misty, though I am using Hance's non-halation developer — 6 grs. Metol, 30 grs. Hydroquinone, 120 grs. Sulphite of Soda in 40 oz. water. The masked edges of the negatives remain clear. Also, in looking at the ground glass, it looks as the print looks: foggy. Now what I want to know is this — are any types of lenses known to photographers to be more free from that than others? If so, which types are best and which are poorest? How about R. R., Dagor, Protar, Tessar, etc. The Hecla is a symmetrical *f*:6.8 type. Are all such based on the expired Dagor patents? Has this fault, if it is a fault, a name like coma or flare? I am aiming to do a few of the most difficult things in photography well, to get a small "rep" and then earn some money, so I am tackling extremes of contrast in order to find out all there is to know about such a job, but I suspect friend Hecla — otherwise a faithful friend — of slinging a monkey wrench into the works. By the way, what causes brilliance of image, said to be a characteristic of some lenses? Extreme definition or something else? Is it real, or mere sales talk? *Answer.* Theoretically lenses without air spaces are rather more brilliant because there are fewer reflecting surfaces and, naturally, the fewer elements there are in a lens, the less loss of light, but the best fog and flare preventer, the easiest and simplest remedy for such defects as you refer to, is to use a good lens shade or hood. Light that strikes the lens at an angle often does more harm than light right straight ahead and a lens hood that extends out far enough to exclude everything except just what is wanted will often help a great deal in getting brilliancy. Of course your lens must be quite clean. We do not think friend Hecla is going back on you; there are no lenses that are entirely free from this trouble and, under certain conditions it is possible to shoot right in to a window without getting foggy pictures. Some times a very slight change in the position of the camera will help. Any high grade lens, an efficient lens hood, portrait films and quick development make up a good team for such "stunts" as you are doing.

Special Methods of Developing and Printing. — E. F. C., Milwaukee, Wis., writes as follows: — Occasionally I read in various photographic literature of taking advantage of "quick development," "checked development" and other special methods during development and printing but have as yet never read of these methods outlined. As I am a subscriber, I take the liberty to enquire whether it is possible that the above be given a page or so in your magazine, or that this letter be treated as a "question" and the answer published in the "Question and Answer" columns of the magazine. I would certainly appreciate knowing the various stunts one can resort to during the development of the negative or during printing the positive that will give a certain desired result, and I believe others will also appreciate reading it. *Answer.* "Quick development," "checked development" and other special methods of developing are of very little practical utility. The quality of the negative is definitely settled as soon as the exposure has been made. Exposure is of the utmost importance and development has very little to do with the quality of the resulting negative. For that reason it is not advisable for any photographer to bother with "stunts" in development; only very slight modification of the negative is possible in development. Diluting the developer with water tends to reduce contrasts a little, the addition of a little extra bromide before development is started will tend to increase contrasts a little in a negative that is known to be overexposed. Beyond this very slight amount of control, we do not think enough can be done to make it worth while to bother with "stunts."

Short Time-Exposure. — C. M. H., Dayton, Ohio, asks the following question: — I am an amateur photographer and a constant reader of American Photography where I get my information on the subject of making pictures. There is one point I have not been able to find out, so I am coming to you for information. I read of one second exposure, one-half second exposure, one and two-thirds seconds exposure: now, what is one second exposure, how do you count or measure the space of time? Most shutters I have examined have different speeds. I make mostly "bulb" exposures on landscapes. If you can help me out in this point, I will appreciate it very much. *Answer.* There are a number of shutters so constructed that they will give automatic exposures of one second or one-half second, just in the same way as the short instantaneous exposures are given. On the Optimo shutter, for example, the range of speeds is — 1 second, ½ second, 1-5th second, and so on, up to 1-300th of a second. With a shutter that has not this range of speeds you have to use the "bulb" (which is now, usually, a flexible, metal antinous release instead of the old style rubber bulb and tube) to give these short exposures and, with a little practice, it is not hard to do this with reasonable accuracy. The best way to count seconds is to say, at an ordinary rate, the words — "one little second, two little seconds" and so on. You can time yourself with a watch and soon get the right speed. Then you set the shutter at "bulb" and begin counting and you can open and shut the shutter on successive counts. Half-seconds can be given in the same way. The old-time portrait photographers used to be very expert in counting seconds and in those days they used a lens cap instead of a shutter, as a general rule, the shutters in those days being very crude and primitive contrivances compared with those of the present day.

Measuring in Degrees. — O. A. W., Massena, N. Y., writes — We have read with much interest the article in your March issue entitled "Know Your Shutter," by Francis M. Weston, Jr. While we consider this a very practical article, yet it appears that an allowance should be made for the width of the strip of paper pasted on the phonograph record; otherwise the shutter speed shown would be slower than it actually is. Were the print shown in Fig. 1, page 150, the same size as the original, then the white strip of paper, due to the movement of the revolving record, would be wider than ¼ inch. To obtain the actual amount of movement we should certainly have to deduct the width of the paper strip, otherwise we would find a shutter speed indicated when the record remained stationary. To obviate this difficulty, I would suggest that two exposures be made, one with the phonograph record in motion and one with it still, and the difference in the size of the two strips would then be the true basis for calculating the shutter speed. *Answer.* We thank you for your letter of March 21st, but we believe the method as printed in American Photography is accurate and that no allowance need to be made for the width of the paper strip. Perhaps the author should have gone into this point, but, frequently, a mathematician who knows himself that a thing is right fails to appreciate that one less versed in mathematics may need an explanation. If we were measuring the length of the arc at the edge of the phonograph disk in inches and comparing them in this way, the allowance which you suggest would have to be made, but, as a matter of fact, we are measuring in degrees, and consequently the width of the strip is of absolutely no importance, provided the two edges of the paper are parallel. The diagram reproduced with the article will show that this is so. You will see that whatever the width of the strip may be, the angle always remains the same and it is the angle that we measure by a protractor or on a watch dial, so the width of the paper is immaterial.

CORRESPONDENCE

Editor of American Photography
Dear Sir:

I will state initially that I have been a regular reader of American Photography for a number of years, as my bound volumes bear witness.

In the May, 1922, issue there is an article by C. B. Weed on speed photography.

The object of this letter is to reply to one or more statements in that article.

In the second paragraph Mr. Weed says, "of the two the reflecting form is the more practical.

"The reflecting camera is also much easier to operate."

These statements were made as a comparison of value of the Graflex and the Speed Graphic, the one reflecting and the other non-reflecting but using a direct view finder.

I do not agree with Mr. Weed, as my experience is the reverse, I will state that I have covered all types of work, in all kinds of weather, and when I am out for high speed work I always use my 4 x 5 Speed Graphic and not once has it failed me in the matter of focusing.

The focusing scale is so graduated that I can get the photograph at practically any distance from 10 feet to infinity and there is not one chance in a million of getting within 10 ft. on speed work.

My reflecting camera is a Thornton Pickard 4 x 5, revolving back, 13 inches bellows extension.

I use this only on ordinary work and on sea photographs. With this camera I use an *f*:6 lens, 9¾ inches focus, or a Cooke Telar, *f*:7, 13½ inches focus.

Mr. Weed says that the news photographers use the Graflex, meaning of course the reflecting type. Is the statement correct in toto? Let us go back a few years.

A number of years ago while on some Navy photography I was using the Speed Graphic. The other photographers, press men, were using the Graflex, and mirror Reflex, both reflecting. A few minutes before we were to make the most important photograph one of the press men "spotted" my camera and asked to look at it. It was the first Speed Graphic which he had seen. He called the attention of the others to it. He saw that the Speed Graphic could be handled more rapidly than the reflecting type. The men with the reflecting type said, almost to a man, that they would ask their paper to buy the Speed Graphic.

I covered the big Salem fire and I was the only one using a Speed Graphic. The day after the fire I was in Salem when I came across a press man with a 5 x 7 Speed Graphic.

I said to him, "You are not from Boston." He asked, "How do you know?" I replied, "Because you are using a Speed Graphic. That is what I generally use but I have not seen any other in use around Boston." The man stated that he was on the *New York Times* and had been sent from New York to get such photographs as he could. He also stated that the press men in New York, were just beginning to realize the value of the Speed Graphic and some like himself had dropped the reflecting type.

Coming down to to-day I find the Speed Graphic or the Goerz Ango, being used by men who formerly used the reflecting type.

In the British Isles and on the Continent, especially on the Continent, the press men, as a rule, use a camera of the Speed Graphic type, that is, one with the direct view finder.

I would not exchange my Speed Graphic for the best reflecting camera on the market.

Referring to the matter of exposure I question if there be any exposure table superior to that of the Burroughs Wellcome & Co. and *I know* that there are tables much inferior.

I have been asked, "How do you know when to release the shutter; when the object moving is where you want it." My reply has been, "I can say only that I 'sense' it."

On "President's Day" at Plymouth, last August, a press man standing next to me and using a 3A Graflex failed to get one photograph which he wanted. I got mine easily. My fellow worker lost his because of the crowd closing in. Well, say, his remarks would not look well in print.

For speed work I use with the Speed Graphic a Zeiss-Tessar *f*:4.5 lens, 6 inches focus, and I find that with good light my sharpest negatives are those made with the lens opening at *f*:6.3, and this regardless of distance. Understand, this is for speed work.

Yours truly,

Maj. A. W. Lowe.

Gentlemen:—

We have been pleased to note your publication of the Ansco formula for tank development of roll film on page 268 of the April issue, for the use of this tank developer is proving very helpful to the photographic business wherever it has been adopted, and for the good of the industry as well as the satisfaction of the public with results obtained we have sought to give it wide publicity. Realizing that a large number of your readers, perhaps the majority of them, are particularly interested in small-quantity solutions and all-round developers, we venture to add a few points in regard to the readiness with which our developer may be adopted to meet special needs.

If the developer is compounded with the quantity of chemicals as listed but with one-fourth the quantity of water, it makes an excellent tray solution, giving complete development in about five minutes at 65° F. For example, take the quantities as listed for the one-gallon tank and use thirty-two ounces of water instead of four quarts. The formula will then read as follows:

Water	32 oz.
Metol	22 gr.
Sodium sulphite	¾ oz.
Hydrochinon	90 gr.
Sodium bisulphite	½ oz.
Potassium bromide	5 gr.
Sodium carbonate	1 oz.
Pyro	45 gr.

The developer can be compounded as above and used for tray, as stated, in small quantities, and diluted in the proportions of one part developer to three parts water when it is desired to develop by the tank method. In the latter case development will be completed at 65° F. in from fifteen to twenty minutes according to the density desired. Of course a developer containing pyro should be kept in a well-stoppered bottle so as to exclude air as much as possible, but if this stock solution is kept under favorable conditions it will retain its quality for several weeks.

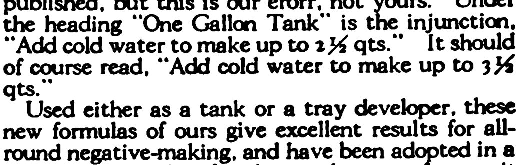
We note just one error in the formula table as published, but this is our erorr, not yours. Under the heading "One Gallon Tank" is the injunction, "Add cold water to make up to 2½ qts." It should of course read, "Add cold water to make up to 3½ qts."

Used either as a tank or a tray developer, these new formulas of ours give excellent results for all-round negative-making, and have been adopted in a great many studios for the regular run of portrait work as well as amateur finishing and the like.

With best wishes for your continued success, we are,

Very truly yours,

Ansco Company.



LOCAL MANIPULATION

As may be gathered from previous divulgings, it is a habit of mine to probe the experience of others who like myself have been long addicted to the practice of photography. Whether this habit springs from a natural human curiosity or from a yearning to know to what extent I myself am a freak, I am not prepared to say, but, whatever the motive, I generally find myself bringing the conversation around to a very personal basis.

Lately I have found that a very good way to get a person to talk revealingly is to ask him point-blank what he has actually got out of photography. The response to this question varies widely, but it generally has point.

Of course there are some who refuse to take the question seriously. "The only thing I ever got out of photography worth mentioning," said one, "is a higher appreciation of a ham sandwich. For years I used to go for a picture tramp every Saturday afternoon when the weather was good, setting out from the office as soon as it closed at noon. Not wishing to waste any time, I would stop at a dairy lunch and get a bag of sandwiches, and a couple of hours later, when quite a few miles from town, I would pause in some rustic nook to devour a few of these. The ham sandwich is a lowly item of diet; it is derived from an animal proverbial for its disregard of the laws of sanitation; ridicule and contempt have been heaped upon it. But let me tell you that when one has not eaten since seven in the morning and after a busy forenoon at the office has tramped for miles under the midday sun, a bag of ham sandwiches underneath the bough, with a brook or a well at a convenient distance, is legal justification for a new book of quatrains by a Persian poet. Long after my adventures in photography are forgotten as such, the immutable ham sandwich will live in my memory as a food divine, displacing even porterhouse steak with onions washed down with dandelion wine."

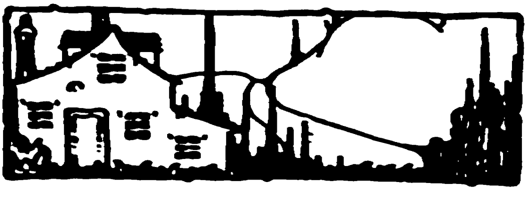
Another amateur disposed to take the question more seriously testified that photography had taught him to appreciate the sky. "I was brought up in the city," he explained, "and about the only notice I had taken of the sky was to observe whether it was clear or cloudy. The motive was utilitarian; if cloudy I might need to take along an umbrella; if clear this would not be necessary. But very soon after I became interested in photography the subject of cloud effects attracted my attention. As is the way with the cult, I bought a set of ray filters and went in for pictorial skies with a vengeance. I found that all clear skies were not exactly alike, that the shade of blue varied widely from one day to another and from hour to hour. There was also a surprising variety in the cloud forms. I learned to classify these and to pick and choose among them for different pictorial effects.

"First and last this has meant quite a bit to me. For one thing, I am more of a weather prophet than I used to be, [illegible] the meteorological reasons for them. But the biggest gain has been in appreciation. [illegible]"

[illegible] that this same nasty concoction was what put the zip into plates and films. The first time I heard this it almost made me sick, but now I don't need to hold my stomach at all when I roll the word off my tongue. In fact, there is a sort of grim humor about it, as there is about so much associated with the Scotch."

As the man who had discoursed on cloud effects was now looking around for a convenient missile, I saw that further revelations were unlikely, and accordingly betook myself homeward to make notes of the conversation.

The Intensifier.



SKETCH-BOOK LEAVES

SUMMERTIME SUBJECTS

To what extent our actions are shaped by circumstance and the effect of climate is well shown by the records of the photographic business in regard to photography in summer. Unquestionably, the long summer is eagerly looked forward to by most amateur photographers who are genuine enthusiasts as a period in which they can give full play to their picture-making impulses, and yet the charts plotted from records of finishers and dealers show a gradual decline in amateur activity after the middle of July, with a sharp drop at the end of August. This decline is certainly not due to any lack of bright sunny weather, such as tempts one to stay out-of-doors, and to many there seems no sufficient reason for it at all. But the fact is that in summer we fail to do a great many things which in the spring we look forward to doing with considerable zest. In the spring we forget that while summer is an outdoor period it is also a period in which most of us tend to side-step exertion, either physical or mental — in which we drift along from day to day instead of anticipating the opportunities which lie ahead. A sort of [illegible] creeps over even the most energetic, and things which require thought or planning are put off to the morrow.

Yet everywhere in the summer there are people working and planning with prodigious zest, leaders of thought and action who do not let themselves be dominated by the influences around them, and when the season of opportunity has passed for others these have a record of accomplishment behind them which speaks eloquently of character and purpose.

So of those interested in photography. All through the summer season which now lies before us there will be many of those who will continue active in their enthusiasm, and at the end of the summer they will have a collection of pictures to be proud of. The inertia which they had to overcome in getting started on days which seemed a little warm for a tramp will be forgotten, and in its place will be the recollection of many a pleasant spot discovered in the course of their summer rambles.

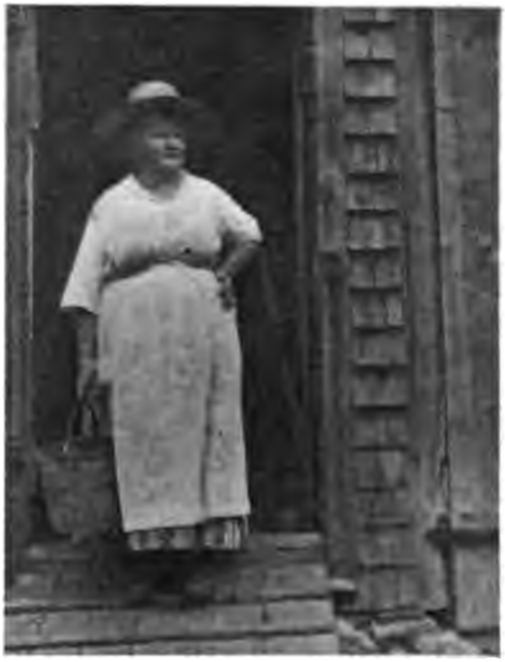
One thing that helps considerably towards success in summer photography is to do as much as possible of your picture-planing before you start, so that when you are out in the open where it is uncomfortably warm you will not have to think too much in regard to what you are looking for. A hit-or-miss tramp is more productive of good pictures in spring than it is in summer, for the reason that in the earlier season you are mentally stimulated by the exercise more than is so later on. From the standpoint of photography, the most successful summer excusions are those to locations with which you are already somewhat familiar, although this does not apply, of course, when one is on a vacation trip amid stimulating scenery with which he has not hitherto been acquainted. The reason why familiar locations are generally more productive is that one knows beforehand what to expect, instead of vaguely anticipating what is not there, and it is always easier to get good results when your mind is fairly clear beforehand about what is obtainable.

As to cars, I recall the case of a friend of mine, who, about to add a car to his worldly possessions, confided in me how great were his photographic expectations now that he was to have a means of getting around the country, with the long walks to locations eliminated and many hours of daylight formerly consumed in leg-work now conserved for actual picture-making. The car did not work out quite as he had expected, however, partly because of the demands of others upon him and partly because of the strange reluctance of a motorist to stop anywhere along the way once he has got started. Actually, he had less time for photography than before its acquisition, and his excursions were far more hurried. This is just another case of trying to combine things which do not easily mix. Photography will always be a solitary avocation to a large extent, and it is no more to be expected that an amateur can do all his picture-making satisfactorily in moments snatched from a family drive than that an artist with his brush and palette can get his results in this manner. True, it does not take long to glance at the finder and release the shutter, but there is a great deal more to photography than this. There must be time for consideration and reflection — for a picture-making frame of mind to form and have adequate play — and this can hardly be achieved with a carfull of people fidgeting around and wishing one would hurry up and get the business over with.

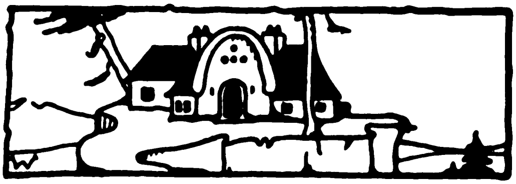
In my own experience, a car has been a big help in two ways. In the first place, it has been the means of acquainting me with a much larger number of locations than I used to know, so that when I have the opportunity to slip off by myself I have no difficulty in deciding where to go. In the second place, it has enabled me to combine picture-making with social enjoyments by arranging excursions to various spots, where the rest of the party would be turned loose to picnic or amuse themselves as they saw fit while the family chauffeur took his camera and tripod and went off about the business which he had himself made the trip for.

THE ILLUSTRATION

In "The Farmer's Wife" Mr. Hilton has given us a picture of unusual interest, and although he calls it a record picture, done as performance of the April assignment, it is much more than that and the best thing we have seen from Mr. Hilton thus far. The picture was taken at 4 P. M. in diffused light, with a 4 x 5 R. B. Telescopic Graflex fitted with 8½ inch B & L. IC Tessar, the exposure being 1-25 second at *f*:5.6. The film negative was developed in the tray with pyro and enlarged on P. M. C. Bromide No. 3, developed in Elon-Hydrochinon.



THE FARMER'S WIFE WILFRED HILTON



THE QUESTION BOX

WINNING ANSWER TO APRIL QUESTION

In commercial work — photographing gift shop articles, a silver service, groups of small objects, and the like — what are the relative advantages of a long-focus lens and a short-focus lens?

Before we can answer this question with any degree of understanding, we must first establish a few facts as a basis from which to work. This is necessary in order that in the end we may be able to draw true conclusions instead of those which are merely apparent. For example, we can not switch the size of our plates and the focal length of our lenses at will and expect to know anything definite in regard to our question when we are through. Let us understand, therefore, that for our purpose we will use an 8 x 10 plate; remembering that whatever is said will apply to a plate of any other size if the same ratio of focal length is maintained in the lens.

We will next establish the focal length of the lens to be used. If we simply say a long-focus lens and a short-focus lens, it leaves too much to imagination

THE WHOLE FAMILY *Criticism Print No. 28* A. PALME

tion; therefore, we will say that our long-focus lens is of 24 " focus, and our short-focus lens is of 12" focus, in order that we may have an idea of the relative sizes of the images at a given distance.

With these facts established, let us proceed to the question at hand. I have made a mental note of the principal things which might be required of a lens if a photographer was doing a commercial job on small indoor objects. I will first list these, placing a star under the lens which I believe best fulfills each requirement as named.

Long-Focus lens.	Requirements	Short-Focus lens.
*	Perspective or Drawing	
	Field of View (If used at infinity)	*
	Working room	*
	Bellows length	*
	Depth of Focus (subject to conditions)	*

From this list it would seem that the 12" lens would be more desirable than the 24" one for my needs. Notwithstanding this I would choose the long-focus lens, because the advantages of the short-focus lens as marked in the list are more apparent or imagined than what would be required.

In the matter of perspective, or drawing, there can be no question but that the 24" lens has the advantage, at least for most work. It is similar to looking at a house while you are close to it. You see only a side or an end or get a limited view of both. Now step back twice the distance and you can get a good view of the end and side; the trees and other objects in the yard are presented in truer proportion to the size of the house; and the house itself does not fall away so quickly. It is true we could get just as good drawing with the 12" lens from the latter position; but we would get an image only half the size, or in other words, cover only half of the plate. We therefore find that to get an image of the same size with the 12" lens as we do with the 24" one, we must get twice as close to our object, which is the cause of our lack of drawing.

This brings us to the question of the field of view. Naturally, the short focus lens has much the greater field of view if used the same distance from the object as the lens of longer focus, but this offers only one advantage, namely; to obtain the same size image with the 12" lens as that given by the 24" lens, the camera need be used only half the distance from the object, consequently there is a great saving of space in a crowded room; but with the lack of drawing as mentioned before.

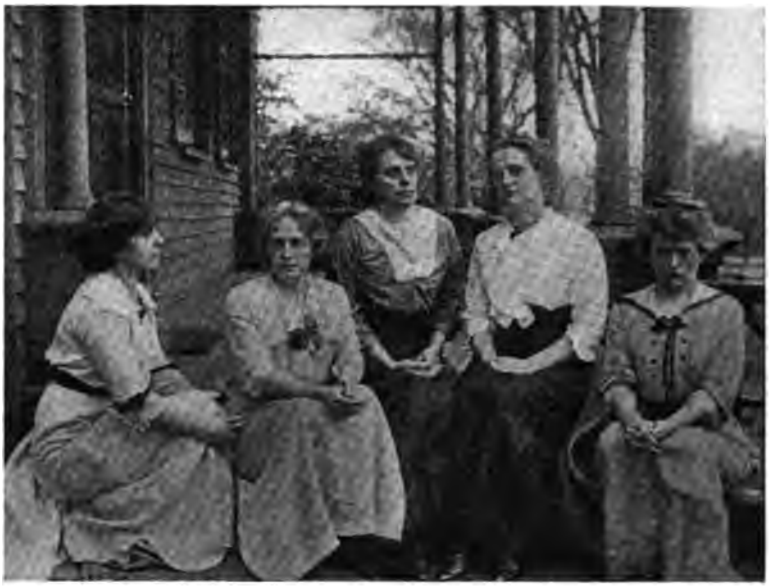
In connection with the fact of working in a crowded room where the space for the outfit is limited, I have favored the short-focus lens with its proportionately short bellows because in such case it is often necessary, and not because I consider it otherwise more desirable.

We now come to one of the most important factors in the case — the depth of focus. There are two ways of considering this question. In one we can say that the lenses are of the same speed, in which case the 24" one would be capable of covering a very much larger plate than the 12" lens. In the other we can assume that the 12" lens is much faster than the long-focus one. I mention this because it must be understood that depth of focus, speed, and great focal length cannot be combined in the same lens. Consequently our 12" lens must have greater depth of focus and greater speed than the long-focus one, unless the latter is ground to cover a much larger plate than 8 x 10, say 16 x 20.

For sake of comparison let us say that the lenses are of the same speed. This means that they have the same equivalent focus and the same relative aperture. In this case they would have the same depth of focus. There would therefore be no advantage of one over the other on this point.

But suppose you do not care to buy a lens for a 16 x 20 plate just to get speed as well as focal length for an 8 x 10. Your subjects are still life, speed is no object, so you buy the slower lens, and, as a result, cut down your depth of focus. You could of course buy the 12" lens and have both speed and depth of focus, but you want to keep away from the danger of improper drawing and buy the lens with long focal length.

We have decided that speed is no object. Now let us see if the lack of depth of focus is really a drawback. Our subject is a group of small articles and we are unable to bring into focus at the same time, those near the camera as well as those farthest away. We focus on those in the middle distance, then stop down, or reduce the size of the aperture, until all



New Criticism Print No. 31

are in focus. By doing this we have corrected to a certain extent spherical aberration, astigmatism, and curvature of field, and have increased its covering power and definition, and all we can say against it is, it requires more time for exposure.

, I would like to mention here that if length of exposure and extreme definition are not important, the use of a pinhole will eliminate all of the undesirable features found in both the long-focus lens and the short-focus lens. Otherwise, I would say, choose a long-focus lens if space permits its use.

Summing up the whole question, it is a case of good relation or drawing obtained by using a long-focus lens, against depth of field, speed, and short space requirement found in the short-focus lens. Of the first I will say that frequently a lack of depth of focus is desirable where the photographer wishes to cut out a lot of irrelevant objects in the background. Speed is not a necessity. And in regard to work done in a crowded room, I would rather not make an exposure at all if space does not permit me to use a lens of sufficiently long focus to do justice to my study. On the other hand, I do not care to use a lens of such long focal length that the objects seem separated and unrelated, as may be easily seen by anyone who will take the time to place a number of objects promiscuously on a table and then look at them from various distances — Neil Wayne Northey.

JULY QUESTION FOR READERS

Wherein is a curtain or focal-plane shutter more efficient than a between-the-lens shutter?

For the best answer to this question received by August 15 a credit of $2.00 towards books of our publication will be awarded. Address the Questions Box Editor, and please write any other communication on a separate sheet of paper.

READERS' CRITICISMS

BEST CRITICISM OF PRINT NO. 28

In the matter of originality the maker of this picture scores heavily. He also shows that he has a sense of concentration by including only "the whole family" in the picture. Technical details such as exposure and development are beyond criticism. Composition and lighting appear to be the only vulnerable points.

There is an appearance of studied placing of the objects which detracts somewhat, the resulting composition not being strong enough to overcome this.

Though this picture would be classed as a still-life subject there is a certain sense of action. Jr. appears to follow in the footsteps of his father, while Bessie takes after Ma. The indefinite fifth member is coming straight ahead. But we are uncertain that this furnishes a ground for criticism, as a slight diversity of opinion is a normal occurrence in all well-regulated households.

The lighting is correct, but unfortunately the maker of the picture overlooked the double shadow caused by the two sources of light. It would be a simple matter to pencil out the lighter shadow. "The whole family" would then be in a position to advance to their deserved place among the graduates of the Readers' Criticism department of our esteemed journal. — Ralph Beebe, 2920 Hillger Ave., Detroit, Mich.

OTHER CRITICISMS

This picture undoubtedly shows that the author took great pains in composing it, and therefore if the results are not exactly what he expected it is not really his fault, for the subject is a most peculiar one to handle. To obtain an artistic picture from several pairs of shoes is almost impossible, for two reasons: first, that no one pair of shoes can be subordinated to the others (?), or, on the other hand, be the center of interest, because every pair constitutes a subject in itself and must be equally as prominent as the others, consequently resulting in a great division of interest; and, secondly the subject of shoes is not a particularly inspiring or beautiful one unless they be of some old artistic age centuries ago, or of some foreign country where there is an interest in novelty or curiosity. Even if shoes of such a character were to be used for a picture theme, only one pair should constitute the picture, because of the first difficulty mentioned. Hence we see that in spite of Mr. Palme's deft attempt to arrange the shoes artistically we cannot help but repeatedly go through the painful experience of trying to look at them all at once.

So much for the subject, which is probably the result of the author's desire to get something new and unique. I have just said that the attempt at artistic arrangement is very good, and so it is except for the little white shoes which, by their position and tone, are violating the laws of correct composition. Their white color, which makes a very extreme contrast with the predominating gray tone by many grades of tone, constitutes an outstanding center of interest in the very center of the picture. I would have left them entirely out of the picture because wherever they are placed their distinguished tone will make them a center of attraction. (How many would leave them out? — **Criticism Ed.**)

The only technical fault seems to be a slight underexposure, for the pumps, the small white shoes, and especially the pair at the extreme left, are lacking a little in detail. The usual remedy of intensifying might help a little, although of course it won't bring detail where there is none.

In spite of these few faults, Mr. Palme's desire to find something out of the ordinary is to be commended, and should be followed by more desires of the same nature, for people are always extremely interested in uncommonplace subjects. — **Warwick B. Miller.**

As a photograph of five pairs of shoes one cannot deny the success of this print. But I'm curious to know just what impression the photographer wished this picture to impart. The title does not help much; it seems even a bit ambiguous. The arrangement is most certainly uninteresting: one would have preferred the shoes lined up according to size. And wouldn't a lighter background have been more suitable for such dark subjects? But before we spend any time on the background let us find the motive. Where, Mr. Palme, is the motive for this print? A pair of shoes just outside a door — yes; a pair of shoes near the leg of a bed — possibly; but five pairs of shoes of various sizes and "sexes" arranged in a nearly straight line — why? The title complicates rather than helps matters, for one cannot avoid thinking, "Where *is* the *whole family?* Why have they deserted their footwear? They haven't retired, for they do not all use the same room. Then where can they be? Why have they run off and left their shoes on display? Ah, yes indeed, why? — **George A. Beane, Jr.**

This is a very interesting genre; an analytical mind could, perhaps describe the "whole family" from this print easier than the chorus can analyze the print.

The double lighting and the way pater and mater shoes point are the chief faults to the writer. As the baby is universally "IT" in the household, the interest would have been concentrated on his or her shoes, which are highlighted, if the parental footwear had pointed to them. Perhaps the double lighting was intended just for this.

The exposure was about correct; the foundation and background offer no discord, and it would be hard to improve upon "The Whole Family," unless by the addition of several more pair. I am a Rooseveltian. — **J. E. Carson.**

NEW CRITICISM PRINT NO. 31

It is some time since we have had a group picture for criticism. Here is one sent in by a reader who says to go the limit, as "I am hard boiled, and these are my sisters, anyhow." The picture was made with a plate camera on a dull day, with the lens stopped down to about *f*:16.

For the best criticism of this Print No. 31 received by August 15 a credit of $2.00 towards books of our publication will be awarded.

OUR COMPETITIONS

Owing to the fact that July and August are vacation months, we are planning to close the competitions on the twelfth of the month, instead of the usual closing date the fifteenth, for these two months only. We hope that all our competitors will help us out by sending their prints in promptly.

SENIOR COMPETITION

The first prize in the Senior Competition was awarded to Kenneth D. Smith for his print entitled "The Corner." This is a representation of one of the busy corners of New York, Forty-second Street and Fifth Avenue, in front of the Public Library, whose classic façade rises in the background. This was taken in the early afternoon, apparently from the top of a passing bus, and shows an unusually happy seizing of an opportunity in a busy street. None of the pedestrians are shown in an unpleasing position and the massing, lighting and arrangement are very interesting. Made with a quarter plate R. B. Auto Graflex, equipped with a seven-inch Verito lens. The exposure at 2 P.M. in December was 1-20 second at *f*:16. The Wellington backed Anti-Screen Plate was developed in a tank with pyro and enlarged on Wellington Brown Black.

The second prize was awarded to J. H. Field for "Trees and Clouds," a very charming study in spacing and in tone values. The quality of the print is excellent and the planes are well differentiated. This was made in Arkansas with a 5 x 7 view camera fitted with a soft-focus lens working at *f*:5.6. The exposure in bright light at 5 P. M. in the fall of 1921 at *f*:5.6 was 1-5 second, using a ray filter. The Eastman film was developed in a tank in pyro soda and printed on Artura Iris E Smooth.

The third prize was awarded to Raffaele Menochio for his print entitled "The Cook," a very charming genre study in which the accessories, the figure and the interesting interior are all well chosen and well placed. We have noticed that Italian photographers are much addicted to story-telling pictures of the costume type, and this excellently carries out the standard set by Guido Rey and other well-known Italian photographers. Made with a 9 x 12 Minimum Palmos, equipped with a 140 mm Zeiss Tessar lens; the exposure at 4 P. M. in September in sunlight in Turin, Italy, was 3 seconds at *f*:6. The Ilford Backed plate was developed in glycerine and enlarged on Illingworth Bromide.

Honorable mentions were awarded as follows: —

One of Nature's Charming Moods	F. A. Northrup
Arizona	Gregory L. Oliver
L'Habitant	Walter Rutherford
Morning at a Temple	Sotaro Saba
On the Aire	J. Herbert Saunders
In the Springtime	Oliver P. Young

Commendations were awarded as follows:

Sun at Midnight	Walter L. Bogert
Sunshine and Shadows	J. E. Carson
Midday Strollers	Edwin B. Collins
Sisters	Fred E. Crum
The Shadow Wolf	Louis A. Dyar
Nature's Architecture	Geo. W. French
Hudson River	Wm. D. Goodwin
Dinner Time	J. K. Hodges
Mr. K.	Harry E. Horrigan
Pennsylvania R. R. Station	Wm. B. Imlach
A Ferry-boat	Jiro Ito
In Her Winter Togs	J. T. Johnston
Where Sleeps the Watercress	E. E. Jones
Tired Out	P. Lalime
The Well House	Frank H. Luwen
A Last Year's Bird's Nest	H. Ross Masterson
Scrub Oak	Dr. E. L. H. McGinnis
Repose	Lyle A. Morse
The Bend by the Birches	Alexander Murray
Old Church of San Francisco	Juventino Ocampo
The Sunday Paper	D. Prince
An Unusual Friendship	Walter L. Pritchard
Mischief	H. B. Rudolph
Vacation Joys	Allen R. Schartzer
The Park in Winter	G. W. Schinkel
Winter's Last Effort	J. A. Singler
The Price of Peace	Eleanor L. Smith
In the Garden	B. M. Whitlock
A Study in Black and White	Elizabeth B. Wotkyns
Maiden's Fantasy	Wm. Yamada

JUNIOR COMPETITION

The first prize in the Junior Competition was awarded to A. S. Workman for a landscape entitled "In the Wanbonsee Foothills" which has the composition, the light and the atmospheric effect of a landscape painting by one of the best English masters. Its beautiful cloud rendering reminds one of a drawing by Turner or Prout, and a great part of its beauty lies in its rendering of distance and atmosphere. Made with a 5 x 7 view camera fitted with a Wollensak anastigmat lens; the exposure near Glenwood, Iowa, in faint sunlight in the morning was a snapshot with a three-times filter at *f*:6.8. The Seed L Ortho plate was developed in pyro and the print was made on Artura Iris from an enlarged 8 x 10 negative on a Seed 23 plate.

The second prize was awarded to Howard C. Cloyes for "A Study In Light," a very formal decorative composition. The light values are well rendered and the handling of the delicate foliage against a cloudless sky is a good piece of workmanship. The line spacing is very pleasing. This was made near San Diego, California, with a 4 x 5 R. B. Telescopic Graflex fitted with an 8½ Bausch and Lomb Ic Tessar lens. The exposure was 1-5 second in bright light at 1 P. M. in March at *f*:16. The Standard Orthonon plate was developed in pyro and enlarged on P. M. C. Bromide No. 7.

Honorable mentions were awarded as follows:

Margerie	Robert E. DeLand
Autumn Morning	Otto Ehmann
Squirrel Corn	Fred Goodin
Portrait	A. M. Odell
Just Fishing	J. C. Rogers
An Imposing Edifice	Ford E. Samuel
Come on in, Water is — not so Cold!	Joseph Wada

Commendations were awarded as follows:—

Pierrette	L. Archambault
Madamoiselle Natalie	Wm. J. Aurich
Cactus in Bloom	Wallace E. Babb
The Lakeside Road	Wm. E. Barr
Early Morning	Ralph Beebe
Robin Redbreast's Home	John H. D. Blanke
Study in Lighting	Ralph B. Bonwit
A Bite	Garfield G. Bowser
Path Through the Woods	H. J. Brennan
This is the Life!	Miles J. Breuer, M.D.
Hello Daddy	E. J. Browne
Bridle Path in March	Robt. W. Burnham
No School Today	W. H. C. Carriers
Making Ice-cream	Miss C. Clarke
One Summer Day	F. X. Cleary
Wild Ginseng Plant	V. E. Clenney
A Hill where Pilgrims Sleep	Herbert Coates
April Charms	Wm. Delano
The Falls	Herbert L. Douglas
The Arbor	Maude Lee Eldridge
Billy Painter	Russell Fassig
By the Placid Stream	Alvin L. Fischer
Pan at Home	Theo. M. Fisher
A Valley Vista	A. T. Flikke
Summer Peace	Merton E. Fournier
Extolling its Merits	Willard H. Harting
I See You	C. V. Hewitt
The Lighthouse	I. Higo
A Mother's Reward	Simon Jochamowitz
Evening Reflections	W. W. Kuntz
A Wood's Road	Jas. S. Loomis
Croton Falls, N. Y.	H. J. Mahlenbrock
Prohibition Days	Mrs. Theo. McCabe
Japanese Art	Philip Mehler
The Winding Road	A. W. Moreau
The Southern Home	W. J. Murphree
Manhattan, N. Y.	I. Nakayama
Photo Enthusiasts	Harold B. Neal
Snow Bird	M. W. Osterweis
The Twilight Limited	H. W. Pontin
A Lowland Brook	W. H. Pote

The Feather River Canyon	F. E. Pugh
The Wissahickon Path	Dr. Armand J. Quick
Cherry Blossoms	F. S. Scheetz
High Noon	Edwards H. Smith
Pikes Peak	H. L. Snow
Allean	Hugh Sowder
Grazing	P. F. Squier
Snow Scene	Albert A. Sterritt
Montezuma Castle	Warwick A. Sullivan
Meadow Brook	E. C. Tibbetts
The Encroachment	H. H. Van Kennen
Dorothy D.	Will R. Walling, Jr.
Reading	W. R. Walton, Jr.
The Birth of Power	R. H. Watson
In the Sierra Nevadas	R. D. Wilson
Good Roads	Walter E. Woestman
The Park	John B. Ziemanski

ROLL OF HONOR

FIRST PRIZE

J. H. Field 8
Geo. W. French 5

SECOND PRIZE

H. B. Rudolph 7
Kenneth D. Smith 7
Alexander Murray 6

THIRD PRIZE

J. Herbert Saunders 8
W. R. Bradford 6
F. D. Burt 6
Wm. J. Wilson 6
Lyle A. Morse 5

HONORABLE MENTION, SENIOR CLASS

Louis A. Dyar 11
Gustav Glueckert 11
W. Kitchen 11
Sotaro Saba 11
Fred E. Crum 9
Herbert J. Harper 9
Edwin B. Collins 8
Juventino Ocampo 8
Oliver P. Young 7
F. A. Northrup 6
Walter Rutherford 6
Walter L. Boger 5
Louis R. Murray 5
James Thomson 5
Elizabeth B. Wotkyns 5

COMMENDATION, SENIOR CLASS

Dr. E. L. C. McGinnis 15
Carlos F. De Moya 14
Gus Schinkel 14
J. A. Singler 14
Arthur Palme 13
E. E. Jones 12
F. E. Bronson 11
C. M. Harris 11
H. B. Neal 11
Frank R. Nivison 11
B. M. Whitlock 11
A. C. G. Allison 10
J. K. Hodges 10
Frank King 9
Leo Kraft 9
Herman D. Warren 9
Geo. Miller, Jr. 7
Stephen J. Bushya 6
John N. Consdorf 6
Victor D. Elmere 6
R. M. Hart 6
Eleanor L. Smith 6
Wm. B. Imlach 5
Jiro Ito 5
Gregory L. Oliver 5
Jas. J. Ryan 5

HONORABLE MENTION, JUNIOR CLASS

Robert E. de Land 5
J. W. Jeffers 5

COMMENDATION, JUNIOR CLASS

John Ziemanski 25
W. Keibel 23
F. H. Chant 22
Garnet E. Jacques 19
Edwards H. Smith 19
Nat S. Smith 19
Howard E. Louis 17
Harvey C. Pendery 17
P. F. Squier 16
Wm. E. Barr 15
H. J. Brennan 15
Edw. L. Gilroy 15
Paul Richardson 15
L. Archambault 14
W. W. Kuntz 14
Stephen J. Palickar 9
G. A. Smith 9
B. F. Willard 9
Ralph Beebe 8
Chester Demaree 8
Herbert L. Douglas 8
Jas. V. Dunham 8
Edwin A. Falk 8
A. T. Flikke 8
R. W. Garwood 8
Fred Goodin 8
Thomas C. Higgins 8
Hannah G. Myrick, M.D. 8
Ford E. Samuel 8
E. E. Williams 8

Howard K. Rowe 14
Talbot Richardson 13
H. J. Mahlenbrock 12
A. S. Workman 12
Simon Jochamowitz 11
Alfred S. Upton 11
J. R. Frow 10
Willard H. Harting 10
C. V. Hewitt 10
Wm. F. Lowe 10
M. W. Osterweis 10
Ivan Sokoloff 10
John H. D. Blanke 9
Miles J. Breuer 9
Walter J. Bruning 9
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OUR ILLUSTRATIONS

FRANK ROY FRAPRIE

"A Deserted Mill" by John M. Whitehead ranked in the estimation of the judges in our Second Annual Competition almost as high as the picture which was awarded first prize, and the two prints stood side by side for some time before the judges selected the one which they thought was the better. It has qualities similar to those of the prize winning print, simplicity of subject, fine atmospheric rendering and a pleasing arrangement of lines to concentrate the interest at the most important point. Lonesomeness is well expressed. This is a composite print from two half plate negatives made on Wellington plates and was enlarged on 10 x 12 Imperial plates. The print was made on Vitegas gaslight. Page 415.

"Dancing Study" by Waldemar Eide is an excellent piece of studio posing and portraiture. It shows an interesting model attractively pictured. Made in Norway with a 7 x 9 studio camera fitted with a Voigtlander Heliar lens, the exposure was short by electric light in a studio at *f*:6. The Eastman Orthochromatic plate was developed with Metol Hydrochinon and printed on gaslight paper. Page 417.

"By Flashlight" by C. Charles is a very interesting genre study made in the kitchen of an old French house. The posing of the figures is interestingly done and the illusion of the fire is well carried out. Made with a 4 x 5 Hawkeye camera fitted with an 8 inch R. R. lens; the exposure in July was 15 seconds to show the fire and then a flashlight to give the illumination enough for the figures. The Standard Orthonon plate was developed in Eastman Special Developer and printed on Artura A Semi Mat. Page 419.

"The Fountain" by Stefano Bricarelli shows us a village scene at Casana in the Cottian Alps. Fountains like this exist in almost every village in Europe and are the ordinary means of water supply for the villages, the pails or jugs being slid under the flowing water along the iron rails seen in the picture. This composition interestingly shows the characteristics of the village architecture. Made with a Suter 9 x 12 cm camera fitted with a 5¼ Suter Anastigmat; the exposure in good light at 11 A. M. in August was 1-50 second at *f*:6.8 with a four times filter. The Agfa Chromo solar plate was developed in glycin and printed on Hoechheemer gum paper from an enlarged negative. Page 421.

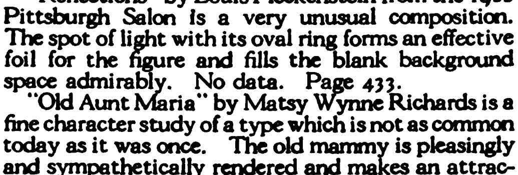
"Dawn" by H. F. Almy was one of the most admired prints at the 1921 exhibition of the Boston Y. M. C. U. Camera Club. Mr. Almy was besieged with inquiries as to where he found his model and more particularly as to where he found his architecture, for he was not known to have left Boston in the period during which the picture was made. He showed becoming coyness in giving the desired details, but was subjected to such a severe inquisition that he was finally obliged to give up the secret. The beautiful model is a small china doll discovered in a toy store; the architecture, which is so well carried out, came from a box of toy building blocks; and the divan is a carefully upholstered half pound candy box with silk pillows made in the proper size. All in all it is one of the most successful built up photographs which we have yet seen. Page 423.

"Wet Day Pavements" by Eleanor L. Smith on page 427, "Miss B" by Victor D. Elmere on page 446 and "Queen Ann's Lace" by J. H. Field on page 451, are all pictures awarded extra third prizes in the Senior Competition for November 1921. Their merits are apparent; their data we regret we are unable to give as they have unfortunately been mislaid.

"Reflections" by Louis Fleckenstein from the 1922 Pittsburgh Salon is a very unusual composition. The spot of light with its oval ring forms an effective foil for the figure and fills the blank background space admirably. No data. Page 433.

"Old Aunt Maria" by Matsy Wynne Richards is a fine character study of a type which is not as common today as it was once. The old mammy is pleasingly and sympathetically rendered and makes an attractive genre study. Made in Greenville, Mississippi, with a view camera fitted with a Semi-achromatic lens, the exposure in Ye Old Barn Studio at 3 P. M. in November was ten seconds at *f*:11 by electric light on a dark day. The Standard Orthonon plate was developed with Azol and printed on Artura Buff E. Page 439.

"Miss Elsie," on page 445, by R. W. Johnston, "Portrait of Miss F.," by Richard T. Dooner on page 447 and "The Afternoon Paper" by W. W. Zieg on page 450, are all pictures which were hung at Pittsburgh in this year's salon. The two portraits furnish an excellent contrast in tone values, one being in a high key throughout, while the other is almost all middle tones. Each is an excellent rendering of likeness and character. No data.



NOTES AND NEWS

Negativ-Entwicklung bei hellem Lichte, by Lüppo-Cramer. 2nd edit. Published by E. Liesegang, Leipsig. Paper, $1.00.

The second edition of Lüppo-Cramer's work brings the subject of desensitizing up to date, Jan. 1922; but obviously the subject is in a state of flux and new facts are being discovered almost every month, as for instance the use of sodium picramate and pinakryptol. All the author's scattered papers are collected and therefore the work forms a welcome addition to the literature of the subject and supplements the first edition. One of the most interesting chapters is that dealing with the composition of the desensitizers, from which it is fairly clear that the two amino groups are the active agents, and that substitution, or partial substitution of one of the same, does not nullify the peculiar action. It shows also that the basic dyes alone do not possess this action, but that some of the acid dyes are equally effective. The author still adheres to his opinion that oxidation is at the bottom of the process, which hardly seems tenable in the face of the fact that Lumière & Seyewetz have proved that as the dye is washed out of the emulsion the desensitizing disappears. Naturally he connects this with his silver germ, "Silberkeimblosslegung," theory, which may be true but is not yet proved.

American Travel and Hotel Directory American Travel and Hotel Directory Co. Inc. Baltimore, Md., Jumbo Edition, cloth bound, the "Mother" publication from which sub-divisions may be purchased separately, price $10.00.

Multum in parvo is an appropriate term to use in describing this unique publication for though the "parvo" is a good sized volume, 6 inches by 9½ and 3 inches thick, the "multum" is almost incredible. An alphabetical list of the United States, including Alaska, District of Columbia and Hawaiian Islands, giving an illustrated history of the State, legal holidays, weather report and information as to hunting and fishing, followed by a list of all the towns and cities in which all the hotels in each place are graded and classified as to the number of rooms, prices, etc., takes up pages 1 to 886. British America comes next, arranged alphabetically, including Canada, Newfoundland, Bermuda and Bahama Islands, then Latin America with descriptions in Spanish and English. A list of Hotel Operations, an Association Directory, a list of all the prominent clubs in every city on the map, a list of restaurants and operators, a list of railroads of the United States and Canada, passenger steamship lines, a list of unusual opportunities, condense a lot of useful information into a comparatively small space. For the sake of making these lists and reports accurate, several thousand attorneys, under annual retainer, are maintained as correspondents in as many advantageously located cities covering the Western Hemisphere. These specially appointed representatives are under contract not only to serve the publishers' needs, but to answer correspondence, attend to special commissions and adjustments for those of the patrons seeking credit, reports and opportunities to supply hotels, clubs, restaurants, etc. with equipments or supplies. They are also at the service of travelers (subscribers) of the book, temporarily in seeming difficulties while in their locality. The last two hundred pages are taken up by the American Hotel Supply Directory, a listing of "live" supply houses, with an index. This is a valuable publication for all who travel either for business or pleasure and it is exceedingly useful as a book of reference.

The Technical Photographic and Microscopical Society was fully organized at a meeting held in the Chemists' Club, New York City. Charles F. Roth who acted as chairman of the meeting gave an account of the organization work to date and outlined its possibilities. It is planned to hold a general convention of industrial and microscopical photographers in connection with an exhibition of photographic work, chemicals and apparatus to be held during the week of the National Exposition of Chemical Industries, September 11 to 16. Officers were elected as follows: — President, Jas. McDowell, of Sharp and Hamilton Manufacturing Co., Boston; vice-presidents, John H. Graff, of the Brown Co., Berlin, N. H., and Bennett Grotta, of the Atlas Powder Co., Tamaqua, Pa.; secretary-treasurer, Thomas J. Keenan, editor of "Paper," 251 West Nineteenth St., New York City. An active committee on Membership and Publicity was appointed, with A. E. Buchanan as chairman. The annual dues for membership were fixed at $5. The next meeting will take place at the Hotel Astor, and be preceded by a luncheon for which a nominal charge will be made. All interested in the development of the new society can get particulars from the secretary at the address given above.

In commemoration of the centenary of the first researches of Daguerre relating to photography, a National Exhibition of Photography will be held in Geneva, in May 1923, which will include an International Section for all that concerns apparatus and products employed in photography and a documentary exposition of the history of photography. The constitutive meeting took place at the Office de l'Industrie, Geneva, with Mr. Victor Dusseiller, Chief of the Department of Commerce and Industry, presiding. The committees of the great photographic associations of Geneva were present, the Société des Photographes (professional), M. Lacroix, President, the Société Genevoise de Photographie, (amateur), M. Doebeli, President, Groupe Photographique de la Section Genevoise du Club Alpin suisse, M. Massarotti, President. The Central Committees of the Swiss Professional Photographers' Union, in Lucerne, and of the Swiss Amateur Photographers' Union in Berne, expressed by letter their interest and assurance of hearty co-operation. M. Rudhart, director of the "Office de l' Industrie," gave an account of the steps already taken and, after having greeted Dr. Mazel, one of the pioneers of the idea of a National Exhibition of Photography in Geneva, gave some details of the proposed organization. Special committees are being formed who will secure to the National Exhibition the requisite importance and world wide representation. All information may be obtained from M. P. Rudhardt, Director, 12 Boulevard du Theatre, Geneva, Switzerland.

Mr. Henry Vendelman writes to us from Belgium as follows: —

I had an opportunity to visit the IVieme Salon of the Photo Club d'Anvers today. Among the works of its members, some landscapes and portraits attained a high standard of excellence, the general tendency, however, being towards controlled processes and oil-painting effects. The most important feature of the Salon was the first public exhibition of color photography on paper by the "Lury Process" which attracted considerable attention. The process is named after its inventor who is a member of the club. The results obtained are very good indeed and there is no doubt but that it will find favor with the public. As yet very little information is available about its working, but the process, being patented, will soon be available to the public at large. Until now, however, only a few people who are directly connected with the floating of a company are initiated. Among them Joseph Misonne exhibited very fine portraits well colored and with splendid effects of light and shade. From Gustave Marissiaux beautiful nudes and pleasing landscapes were on view. Besides these, Leonard Misonne, an invited exhibitor, had thirty magnificent landscapes in his usual oil process on the walls, several among them never having been exhibited before. The Photo Club d'Anvers has every reason to be satisfied with this fine exhibition and there is but little doubt that some of the works on view here will be shown abroad.

As a summer undertaking the Toronto Camera Club has entered upon a large and public spirited work in which the entire membership will take part. This is the collection of a magnificent set of lantern slides to illustrate the city of Toronto from a pictorial point of view. They would afford great interest to the club and could be loaned to other bodies and the club derive therefrom much advertising of a dignified character. The directors have worked out a rough plan to achieve this purpose. Subjects have been chosen and each one assigned to a member who is known to be interested and to have been fairly successful in that line. These will lead in collecting pictures for that subject. Prizes will be awarded for the best pictures in Landscape, Marine, Architecture, Genre and any subject which may be deemed advisable. Subsequently the club directors will ask for the loan of negatives chosen for the set, or will ask the members to make the slides themselves The following group of subjects, with the chairmen, have been decided upon: — Parks, A. R. Blackburn. Street Scenes, G. R. Smith. Humber District, W. V. Mills. Public Buildings, R. M. Collins. Monuments, M. D. Hammond. Residences, A. Brigden. Island, J. H. Mackay. Sports, F. Baird. Exhibition, E. Hoch. Flower Studies, P. L. Tait. Don and Scarboro District, A. S. Goss.

This is a worthy undertaking and one that might well be considered by camera clubs in other cities.

FORTH COMING EXHIBITIONS

Place	Date	For information write to:
Royal Photographic Society Closing date for entries, August 25th, 1922	Sept. 18 to Oct. 28	The Secretary, Royal Photographic Society, 35 Russell Sq., London, W. C.
Frederick & Nelson	Nov. 6 to 18 inclusive	Frederick & Nelson, Seattle, Wash.
London Salon of Photography Latest date for entries, August 30th, 1922	Sept. 9 to Oct. 7	Hon. Secretary, London Salon of Photography 5A Pall Mall East, London, S. W.

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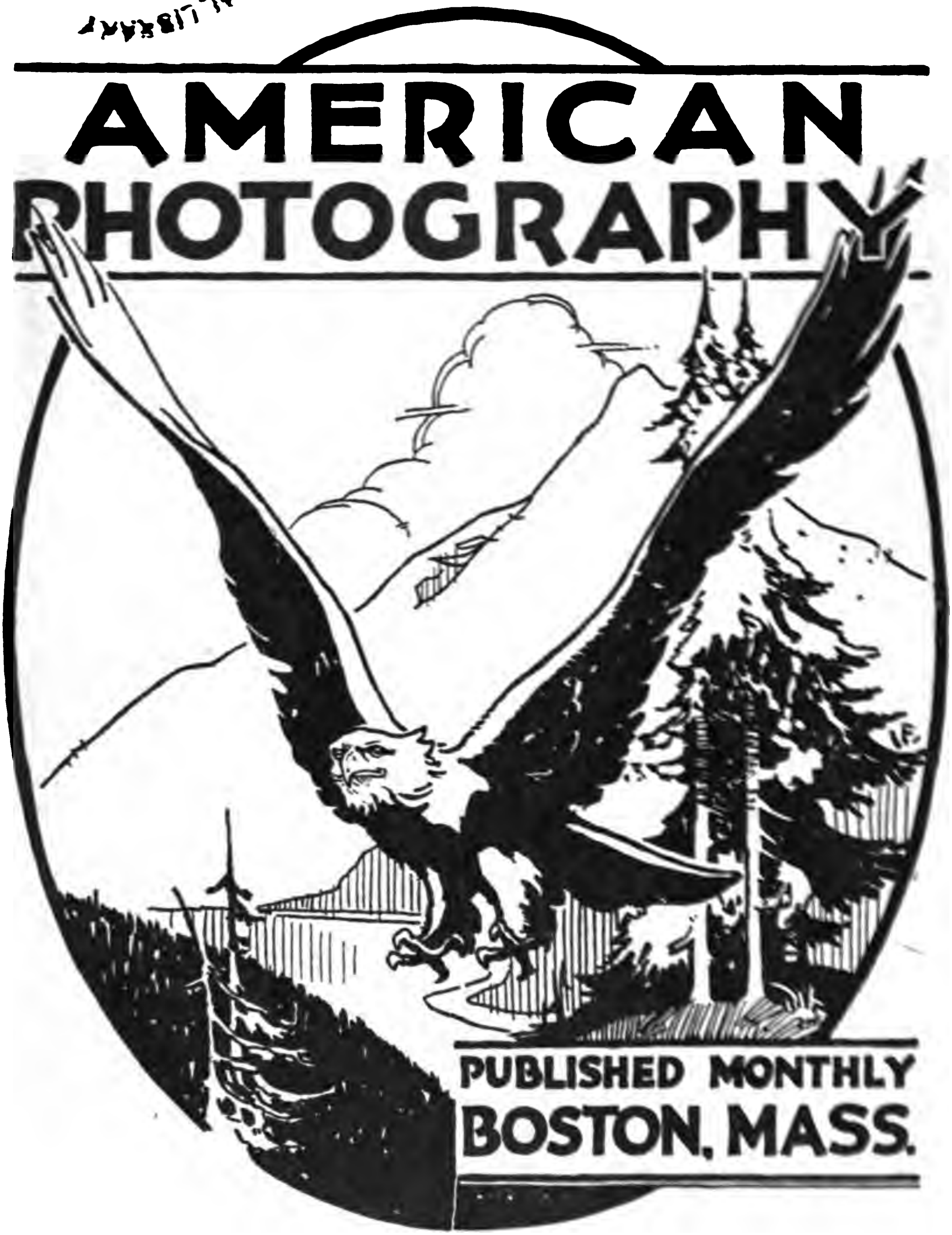

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Vol. XVI BOSTON, MASS., AUGUST, 1922 No. 8

THE ALKALIS IN DEVELOPMENT

E. J. WALL, F. C. S., F. R. P. S.

PROBABLY few recognize that alkaline development was discovered sixty years ago, more than twenty years before the first gelatine dry plate was made, and that pyro-ammonia was used. This was a great advance over the old acid developers and it differs entirely in its action. With the old iron or pyro-plus-silver developers, we had what is called physical development, in which, practically, the light-affected silver salts were not in themselves reduced, but merely acted as germs or nuclei for the deposition of the nascent metallic silver of the developer, which was deposited on the top of the film. With alkaline developers, the light-struck silver salt is itself reduced and the image is formed in the thickness of the vehicle, there being no free silver nitrate or other salt to form the nascent silver.

It is not going too far to ascribe some of the merit of the discovery of the alkaline developers to an American, E. Anthony, of the well known firm E. & H. T. Anthony, the predecessors of the Ansco Co. He stated in 1861, that the speed of a bath collodion plate could be increased by fuming it with ammonia prior to exposure. Then Wardley suggested the use of a neutral solution of pyrogallol, and Leahy and Russell almost simultaneously discovered the action of alkaline pyro, which could have been a logical outcome of Anthony's suggestion.

At the present time one may say that with the exception of amidol, and like developing agents, an acid developer is never used, and probably even with these the hydrolysis of the sulphite, which is always used with them, furnishes the sodium to form the phenolates that are the actual reducing agents.

Unfortunately we are accustomed to use the term "developer" not only for the real reducing agent, but also for the solutions as a whole, which sometimes leads to a little confusion or doubt.

As a legacy from the early days of the dry collodion plate and collodion emulsion, ammonia was the first alkali used, and though it persisted for many years, it has now fallen into almost complete disuse, except with color screen-plates, so that it is not worth while to discuss it. Its disrepute is founded on the fact that it is very volatile and therefore the developer is constantly changing, and to the fact that but very few experiments have been recorded of the use of ammonia with the newer developing agents, in which we may include every one except pyrogallol.

Of the fixed alkalis we have the carbonates and the hydroxides, usually called the caustics, of potassium and sodium. It may be as well to try and give a sketch of the part played by the alkali in development, and this may be briefly represented by the following equation:

$$2\ AgBr + 2Na_2CO_3 + H_2O = 2Ag + 2NaBr + 2NaHCO_3 + O$$

Or putting this into words, the bromine set free from the exposed silver bromide combines with some of the sodium carbonate to form sodium bromide and sodium bicarbonate, which are restrainers, while oxygen is set free, this molecule of oxygen being taken up by the developing agent. If this last reaction does not take place there is no development, for it is the capacity of the developing agent for oxidation that starts the reduction of the silver, and the alkalis accelerate the action.

The carbonates are the most generally used salts, and it is generally assumed that the potassium carbonate gives greater density than the corresponding sodium salt. Actually it gives a little more rapid development. It has fallen into considerable disuse because of its higher price and its proneness to deliquesce, or absorb water from the air. The sodium carbonate is the more generally used.

There are actually three carbonates of sodium; the bicarbonate or acid carbonate, $NaHCO_3$, the sesquicarbonate, $Na_2CO_3.2NaHCO_3.3H_2O$, both of which are practically useless for development, and the normal sodium carbonate. This is the salt actually used and it exists in three forms: the crystalline, or decahydrate, $Na_2CO_3.10\ H_2O$, the monohydrate $Na_2CO_3.H_2O$, and the anhydrous salt Na_2CO_3.

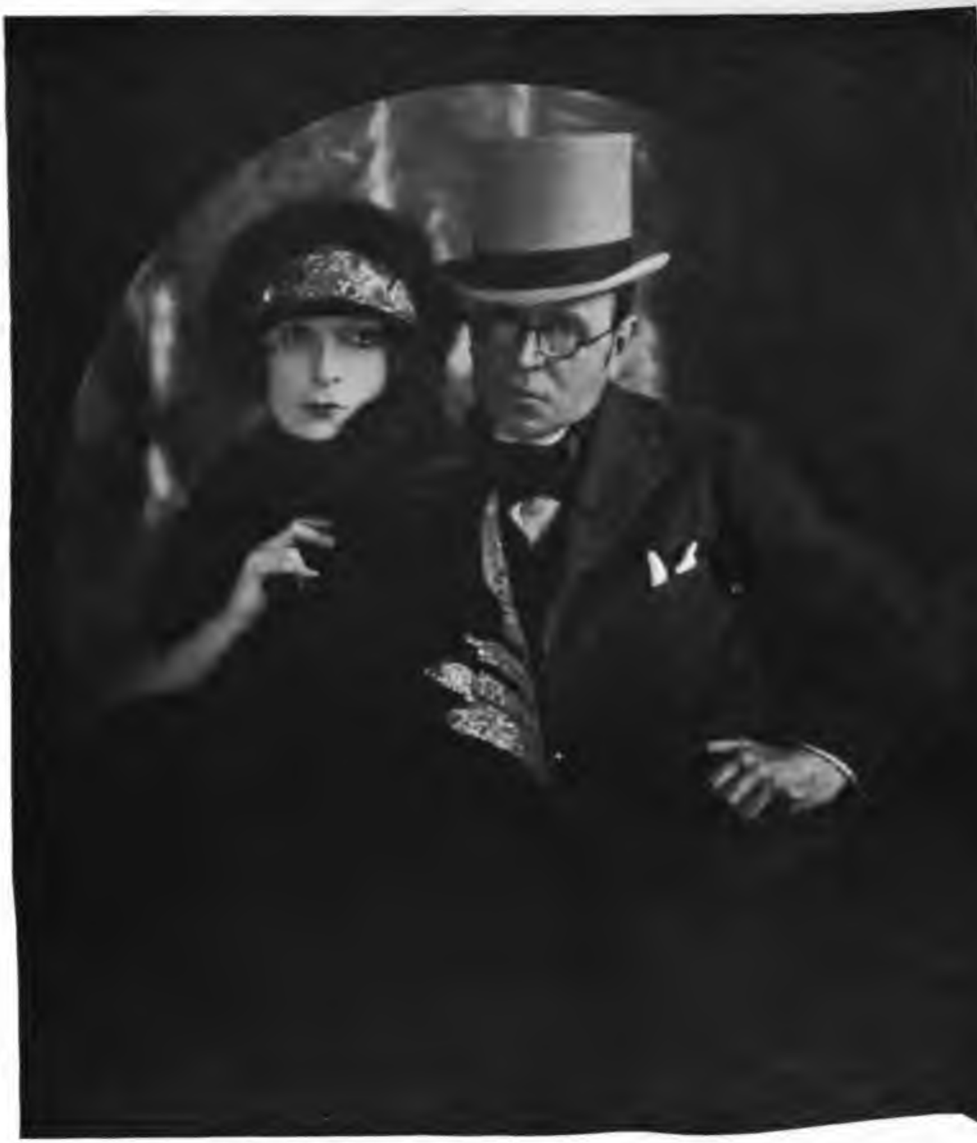
If we place under these formulas their molecular weights we shall easily see what relation they bear to one another:

$Na_2\ (CO_3).(10H_2O)$
$46 + 60 + 180 = 286$
$Na_2\ (CO_3).(H_2O)$
$46 + 60 + 18 = 124$
$Na_2\ (CO_3)$
$46 + 60 = 106$

Therefore, it is clear that if we use the crystalline salt, we are actually paying for and using nearly two-thirds of water.

In most formulas we meet with the term "anhydrous," whereas as a matter of fact the true anhydrous salt is rarely used, the photographic desiccated soda being the monohydrate. It is generally assumed, too, that this is double the strength of the crystalline salt, but actually it is stronger, in the ratio 286: 124, or 100: 43.4 But we shall not make a very grave error if we assume that the desiccated soda is double the strength. For instance, taking a typical developer containing 5 per cent of crystallized carbonate, it contains approximately 25 grains per ounce of solution; then if we use half the quantity of the dry salt, the error will be under 2 grains per ounce. This excess is negligible and may well be within the error of weighing.

The dry salt has the advantage over the crystalline, besides not taking up so much room, of being more stable, as it is not so likely to effloresce, or lose its water of crystallization. It should be noted that commercial carbonate, if not properly kept, almost always contains some of the bicarbonate, as it absorbs carbon dioxide from the air along with moisture. After thirteen days exposure to the air it may contain as much as 15 to 20 per cent of bicarbonate, which is useless for developing. It is obvious, also that the crystalline salt is much more prone to this decomposition than the desiccated, because of its richness in water (H. Dubovitz, *Chem. Ztg.*, 1921, **45**, 890).



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The quantity of carbonate to be used with a given developer varies considerably according to the predilections of the worker, or writer, and variations within reason make no essential difference, save in the velocity of development. One may, of course, adopt the formula suggested by the plate maker, and it is always assumed, and sometimes claimed, that these are the best suited to the plates. But as someone once said "A maker's formula generally shows the maximum amount of alkali and the minimum amount of restrainer, or, in other words, is the most trying developer that it is advisable to employ, or that the maker will guarantee his plate to bear."

The more alkali used the more rapid the development, and the shorter the total time of development. Increase of alkali cannot bring out more detail than the exposure has put into the plate. The only advantage in the larger amounts of alkali is that they develop out the fainter details in the shadows more quickly, so that one may stop development before the highest lights have become too dense to be properly rendered in a print.

W. F. Ermen has recently shown (*Phot. J.*, 1922, **62**, 123) that, except in the case o

EZRA POUND E. O. HOPPE

hydrochinon, increase of carbonate of soda above N-5, that is about 1 per cent of the anhydrous salt, does not affect either the time of appearance or the density. As the time of appearance of the image is a practical measurement of the velocity and duration of development, it is obvious that if we use more than the above quantity we are merely wasting it and probably causing a greater tendency to fog.

The caustic alkalis, the hydroxides of potassium and sodium, are not so much used, except with some of the newer developers, mainly because they are supposed to cause frilling, cause more fog, and attack the fingers. As a matter of fact they can be used with excellent results, provided they are used properly. Their action with the developing agents is to form salts, the so-called phenolates, and this is well shown in the case of pyrogallol. The formula for this is $C_6H_3.OH.OH.OH.$, and it is possible to replace the H (hydrogen) of the three OH molecules with either potassium or sodium. Then we have:

$C_6H_3.OH.OH.ONa$, the monophenolate
$C_6H_3.OH.ONa.ONa$, the diphenolate
$C_6H_3.ONa.ONa.ONa$, the triphenolate

The last of these compounds, the triphenolate, is so energetic that it will reduce unexposed silver bromide at once, that is it fogs the plate all over at once. The diphenolate is not quite so energetic and begins to reduce the image, but in about 2 minutes it also fogs the plate. The monophenolate gives no more fog than the carbonate, yet develops more quickly and actually converts the pyro developer into one that is more like metol than anything else.

It is easy to calculate how much of either of the caustic alkalis is required to form the monophenolate. Taking the molecular weight of pyrogallol, so often called pyrogallic acid, though it is not an acid, as 126, we only want to add one molecule of soda, $NaOH = 40$, or $KOH = 56$, to the above quantity, according to the following equation: —

$C_6H_3.OH.OH.OH + NaOH = C_6H_3.OH.OH.ONa + H_2O$

Putting the above facts into a formula we arrive at the following:

A.	Pyrogallol	25 g	192 gr.
	Sodium sulphite, dry	82 g	630 gr.
	Water	1000 ccm	16 oz.
B.	Caustic potash	11.5 g	88 gr.
	or Caustic soda	8.5 g	65 gr.
	Water	1000 ccm	16 oz.

For use mix 1 part of A, 1 part of B and 1 part water. This gives normal density in from 2½ to 3 minutes, and a good black image with practically no trace of fog. This was suggested by E. Valenta (*Phot. Korr.*, 1902, **33**, 703) and worked out on the above argument.

Some may consider that, as practical workers, there is very little interest in such facts as these, and that the equations are put in either to look learned or to pad the notes. But suppose we apply them to a particular case, and for this purpose take the article of Mr. J. J. Proskauer (*This Journal*, 1922, 242). In the first place I should personally find fault with the formula, because it leaves me in doubt whether the total bulk of the solutions is to be 72, 32 and 12 respectively, or whether the salts have to be added to these quantities of water, when the volume of each solution would be an unknown quantity, on which exact arguments cannot be based. Mr. Proskauer has probably given the formula as he received it.

As the caustic alkalis form the phenolates, and the formula of hydrochinon is $C_6H_4.OH.OH$. it is clear that caustic soda may form either the monophenolate or diphenolate, according to the quantity used. Assume the molecular weight of hydrochinon to be 110, thus

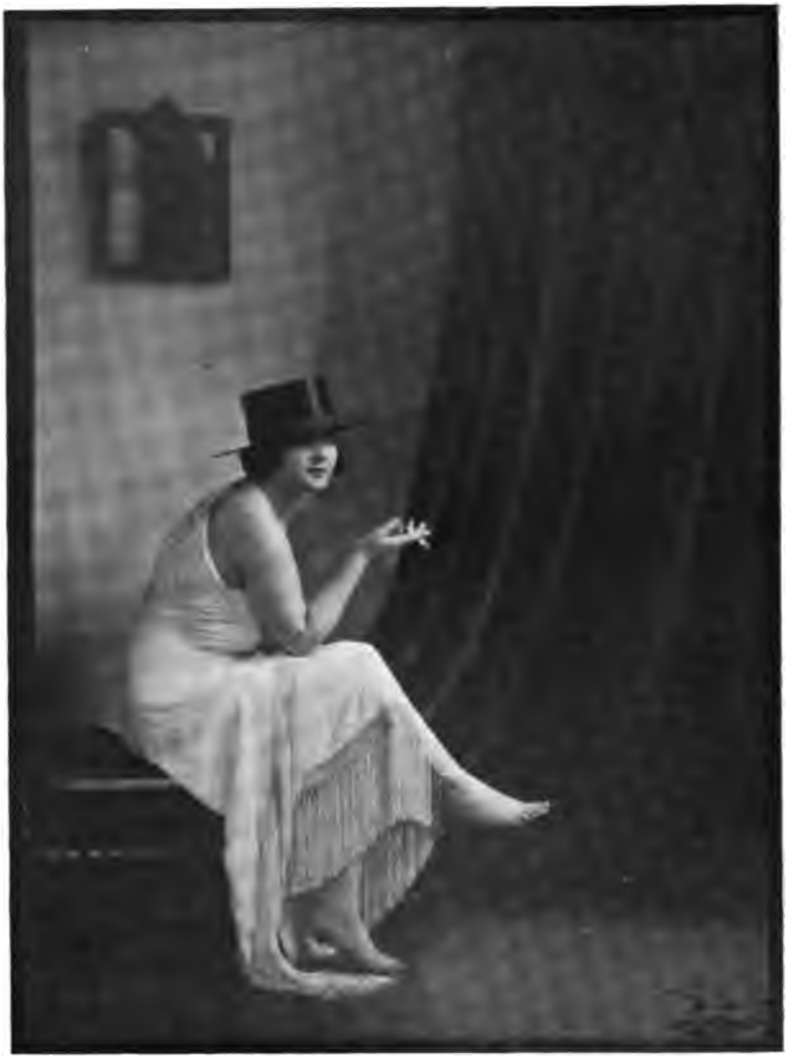
$C_6H_4OH.OH$

$72 + 4 + 17 + 17 = 110$

Then the monophenolate is formed with 40, the molecular weight of the soda, and the diphenolate with 80.

Now to apply these facts to the formula. Assuming the total bulk of A and C to be 72 and 12 respectively (B does not interest at all in this calculation), than it is obvious that as they have to be mixed in the ratio of 4:1 there will be 73 grains of hydrochinon and this must require 53 of caustic soda to form the di-salt. But there were actually used 219 grains. That is 3⅓ times too much, or an excess of 166 grains in the 5 ounces of mixture, or taking into consideration now the B solution, there were 23.7 grains of caustic extra per ounce, which can do no good except blacken the plate.

If the quantity of soda in this formula be reduced, one ought to have an equally active developer, with far less tendency to fog. Incidentally let it be remarked that the use of postassium ferrocyanide in conjunction with a caustic alkali and hydrochinon was sug-



FEDORA ROZELLI

E. O. HOPPE

gested by G. Balagny in 1891 (*Phot. Archiv.*, 1891, 10) and A. Lainer (*Phot. Korr.*, 1891, **28**, 6), and the latter's formula was for many years a favorite in Europe. The "Les-Lite" formula is merely a botched-up Lainer formula.

Should one want to use one or other of the salts, the following brief table shows the equivalent weights that should be used.

$NaOH$	KOH	Na_2CO_3	$Na_2CO_3.H_2O$	$Na_2CO_3.10H_2O$	K_2CO_3
80	112	106	124	286	138
1	1.400	1.325	1.550	3.575	1.725
0.714	1.	0.946	1.110	2.553	1.232
0.755	1.033	1	1.170	2.698	1.302
0.323	0.452	0.858	1	2.307	1.113
0.280	0.392	0.371	0.433	1	0.483
0.580	0.812	0.768	0.899	2.072	1

To use this table it is only necessary to multiply the weight of a given alkali by the figure to that which it is desired to use, thus 5 of anhydrous soda are obviously equal to 1.170 x 5 of the monohydrate.

There is one action of the alkalis with developing agents, which are combined with acid radicales in order to increase their solubility in water, that should not be overlooked, and that is that the free base is precipitated on the addition of small quantities of the alkali. This is particularly noticeable with paramidophenol hydrochloride, $C_6H_4.OH.NH_2.HCl$; the action of the first addition of an alkali is to combine with the hydrochloric acid, setting free the base, which is not very soluble in water, and only on the addition of further alkali does it go into solution. The developing agents which show this property more or less are adurol (brom or chlor-hydrochinon), diamidoresorcin hydrochlorate, metol or elon, ortol, paraphenylendiamine hydrochlorate and triamidophenol hydrochlorate; though with most of these, unless a fairly strong solution be used, the precipitate passes unnoticed. Naturally one has in these cases the chloride or sulphate of the alkali formed, and the former acts as a restrainer in developing.

Besides the above alkalis there are a few other agents that have been suggested, but which have not come into general use. Sodium tribasic phosphate, $Na_3PO_4.12H_2O$, was suggested by Lumière (*Jahrbuch*, 1896, **10**, 190) on the ground that it gave greater density without attacking the gelatine or causing fog. However, this hydrolyses, on solution in water, into the normal or di-sodium phosphate Na_2HPO_4 and caustic soda $NaOH$:

$$Na_3PO_4.12H_2O + H_2O = Na_2HPO_4.12H_2O + NaOH$$

380 358 40

It is therefore obvious that we only have to mix the normal phosphate and caustic in the weights given under the equation to form the same thing.

Acetone, $CH_3.CO.CH_3$, a charateristically smelling colorless liquid, produced by the dry distillation of acetates, was also recommended by Lumière & Seyewetz for use with those reducing agents capable of forming the phenolates. Its first action is to combine with the sulphite of the developing solution and form acetone sulphite, with the setting free of the sodium which combines to form the phenolates, as in the case of hydrochinon thus:

$$2CH_3, CO.CH_3 + 2Na_2SO_3 + C_6H_4.OH.OH. =$$
$$2(CH_3.CO.CH_3.NaHSO_3) + C_6H_4.ONa.ONa$$

This has not come into general use and its only virtue would seem to be that it costs a little more; it works fairly free from fog, does not stain much and does not soften the gelatine.

MAN WITH BOW J. H. FIELD
First Prize, June Senior Competition

The only other compound we need consider is formaldehyde, again suggested by Lumière & Seyewetz (*Jahrbuch*, 1898, **12**, 419), its action being comparable to that of acetone. The only developer that may be considered as having come into any use at all with this is the following:

Hydrochinon	16 g	123 gr.
Sodium sulphite, dry	80 g	614 grs.
Formaldehyde	20 ccm	154 minims
Water	1000 ccm	16 ozs.

This is an extremely useful developer for making negatives of black and white line drawings and diagrams, as it gives, on photo-mechanical plates, extreme contrasts with clean whites.

The lithium compounds have been suggested and a few other isolated agents; but in the first case the price and insolubility of the lithium salts is against their general adoption, and in the other cases they would seem to have been suggested for the sake of spending more money or as merely something for some one to write about.

MARINE PHOTOGRAPHY

ARTHUR HAMMOND

ILLUSTRATED BY W. L. MACASKELL

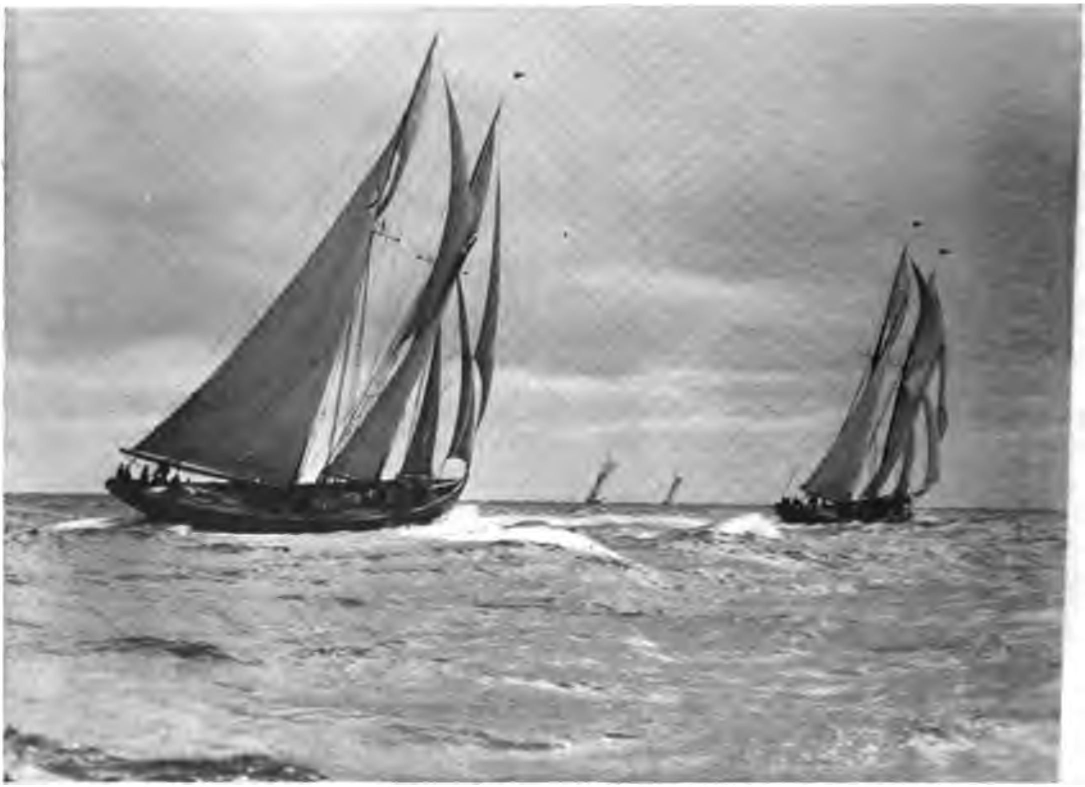
MARINE photography is one of the branches of photographic work that has an almost universal appeal. Everybody feels the call of the sea, and possibly in some cases the enjoyment of pictures is stronger than the real thing, for we can appreciate a picture of a rough and stormy sea without any risk of *mal de mer*. Few camera enthusiasts can remain long on or near the ocean without feeling the urge to use the camera. Fortunately the ocean is accessible to a large number of people, though there are many who have never seen it and who can satisfy their curiosity only through the medium of pictures. It is important therefore that the pictures should suggest as truly as possible the spirit of the sea and should convey some impression of its grandeur and immensity.

In all picture making we must rely very much on the power of suggestion to convey ideas. Some of the ideas and thoughts to be suggested in pictures of the sea are boundless space, restlessness, irresistible power, etc. In order to convey such ideas as these by means of a comparatively small picture, we must avail ourselves to the full of the possibilities at our disposal of pictorial composition, the mechanics of suggestion. By means of perspective, for instance, both linear and aerial, we can suggest depth and distance. This is well exemplified in Fig. 1, in which the distant boats, by their contrast in size with the vessels close at hand, help very much in giving a suggestion of great distance. In "Gray Dawn," Fig. 7, the same thing may be observed. Another impression we can convey is that of motion and speed. A sailing vessel careened by the wind, with her sails filled, or a steamship, ploughing through the water with "a bone in her teeth" and a long line of black smoke streaming from her funnels give a very strong suggestion of speed. Examples of this are seen in Fig. 4 and even more strongly in Fig. 2.

The appeal of marine photography is wide and varied; the artist, the technician, the lover of sport and excitement all find satisfaction in its pursuit. It calls for photographic skill and experience and also, very often, for quickness of thought and action. It appeals to the artist because of its possibilities as a subject for pictures of the highest artistic merit. Effects of light and shade and atmosphere call for a highly trained perception of the pictorial in arrangement or composition. It appeals to the technician because of the many interesting problems to be solved; problems of exposure, color rendering and other interesting technical difficulties. The marine photographer must possess or must cultivate an instinctive sense of fitness in the arrangement of his subject.

The term marine photography would be applied to pictures of rocks and surf, of beaches, of shipping and harbor scenes, all taken from the shore, as well as to pictures of the sea or of ships taken from another vessel. In making pictures from the shore, it is usually possible to take ample time to select the subject and the best point of view from which to take that subject. The picture may be carefully and deliberately planned and composed; the artist can, in many instances, pick the most suitable time of day and can delay making the exposure until conditions are about as he wants them. But, when photographing from a moving vessel, no such deliberation is possible; the picture must often

RACING FOR THE BUOY—*Figure 2*
W. L. MACASKELL



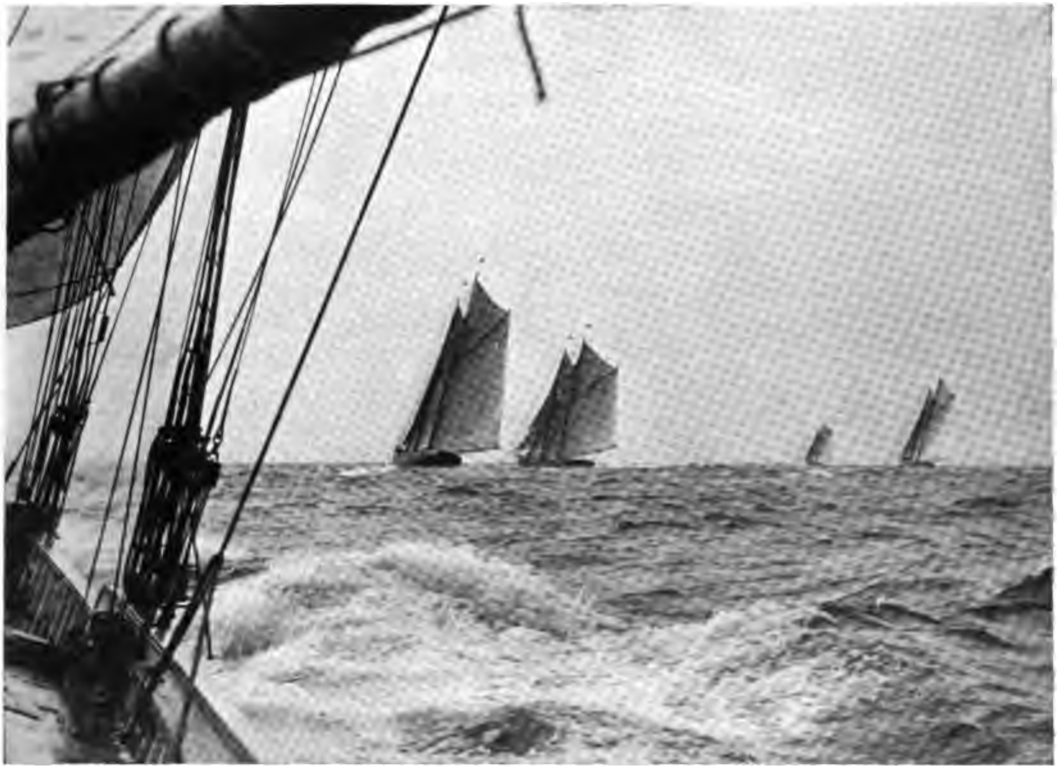
SCENE IN THE NOVA SCOTIA FISHERMAN'S RACE—*Figure 1* W. L. MACASKELL

be secured without any hesitation or it will be too late. Sometimes it is possible to anticipate and prepare for the right moment, as was the case with Fig. 2, "Racing for the Buoy," in making which, the vessels were watched on the focusing screen as they were approaching and were snapped when they were in the right place. This picture conveys the idea of motion very strongly and in this respect is far ahead of Fig. 3. Both Figs. 1 and 2 are good newspaper pictures as they tell a story of an important event and tell it in a graphic and interesting manner.

Fig. 4 is unusually interesting both from the artistic and the story-telling point of view. The tones are excellent and suggest very convincingly the dark blue-green color of the water. The sky, too, is very fine and there is a strong suggestion of motion. It is a thoroughly satisfying and artistic picture and, at the same time, it has news interest as being an excellent picture of the "Elsie" — the American contender in the International Fisherman's Schooner Race in 1921. In "Over the Horizon," Fig. 5, the same excellent tones are seen.

Those who have studied the sea in its many and varied moods must have been impressed with its ever-changing color; sometimes bright and sparkling, sometimes dark and somber, but always varying from day to day. Although the sea is interesting at all times and under all conditions, perhaps the best kind of day as far as color is concerned is one on which there are light clouds giving a bright but diffused and even lighting

Of course an orthochromatic plate and a properly adjusted ray-filter are necessary to render these colors in their true relative values. The blue of the sea, though often vis-



OVER THE PORT RAIL—*Figure 3* W. L. MACASKELL

ually dark in tone, is very actinic and would tend to appear too light without such precautions. In some cases full correction of color values is desirable, but often, if the picture includes only sea and sky with, perhaps, a distant vessel or two, the exposure can be so short that the values can be preserved without any filter. The exposures for marine pictures, as a rule, are so short that the use of a three or four-times filter is not at all inconvenient and, even though pretty good tones can often be obtained without a filter, it is always better to use one. For latitudes 35° to 45° North, daylight saving time, the exposure for a picture such as Fig. 5, bright light, between 11 and 3 in May, June or July, Speed film, stop *f*:8, would be only 1-500 of a second, so the comparatively brief exposure of 1-100 of a second would be ample even if a five-times screen were used.

With regard to the apparatus for marine photography, it will be found that a lens of rather greater focal length than usual will be advisable. There are often great distances in such pictures and a long-focus lens will help to render distant objects in the way the eye sees them. Almost any type of camera may be used, though a camera of the reflecting type with plenty of bellows extension has been found by the writer to be the ideal instrument. The full-size focusing screen is often very helpful because often a ship or some distant object is so small as to be hard to see in a small finder.

The place of the important object of interest in the picture space must be carefully considered in marine pictures as well as in others. This should be hardly ever in the exact center, but should preferably be located about one third of the space away from one side and the top or bottom of the picture. In a picture of a ship or any other moving object, it is almost always necessary to leave more space in front of it than behind. We usually want space in a picture for the object to move into.

The horizon line should not be exactly in the middle or very near the middle, but should be, roughly, about one third of the space away from the top or bottom. If the sky is an important factor, the horizon line may well be rather low, but, if the interest is mainly in the lower part of the picture, it should be high. There should be, approximately, either two thirds sea and one third sky or one third sea and two-thirds sky.

When photographing ships at sea from another vessel or from the shore, they are often so far away as to be rather small in the picture and there is generally plenty of space around them to allow of trimming. Their position in the picture space can often be improved by trimming or by making an enlargement of a part of the negative.

With regard to the pictorial possibilities of marine photography, these are practically unlimited. There is no reason, of course, why pictorial interest and news interest should not be combined as it is in Fig. 4.

Fig. 6, "The Old Windjammer," is highly pictorial and is interesting by reason of its subject, but in Fig. 7 the pictorial interest is due to the treatment of the subject. Both these pictures might have been improved by a little different placing of the important object in the picture space. In Fig. 7 the small schooner away off in the distance adds very much to the artistic effect.

In Fig. 8, "Departure of the Transport 'Acquitania,' " the huge bulk of the steamer is well suggested by the contrast with the little tugs on each side of it.

OUTDOOR PORTRAITURE AND FIGURE STUDIES

CARROL B. NEBLETTE, DIRECTOR

Division of Photography, Pennsylvania State College

ONE of the most interesting fields of the camera worker is seasonable at this time of the year — that of outdoor portraits and figure studies. There is a wide and fascinating field here, not only for the amateur who wishes to secure the best possible pictures of his friends, but infinitely more so for the pictorialist and the portrait worker. Outdoor portraits have a charm distinctively their own. The brilliant yet soft light which is easily secured with a little care is suitable for the short exposures which allow advantage to be taken of the various positions and expressions of the model. For this reason the amateur equipped with an inexpensive outfit will find his outdoor portraits superior both in technique and in expression to those attempted indoors. There is a lack of artificiality, a sense of atmosphere, and a feeling of freedom and warmth in an outdoor portrait which is almost impossible to secure in the studio under any conditions.

To those who would like to see some notable work in this line and see the possibilities of the field, I would recommend the past issues of this magazine, especially the work of Mr. J. H. Field. Mr. Field is an expert in this line and his work possesses a certain indefinable and pleasing quality that is seldom equalled.

One great advantage of this work is that no expensive equipment is needed and that the late hours of the day in the soft light of the low sun are the very best time, while this

DEPARTURE OF THE TRANSPORT "ACQUITANIA"—*Figure 8* W. L. MACASKELL

is also the time when most of us will find leisure hours from our daily employment. My own work has all been done after a day's work in the office, while the sun was still one or two hours high. I believe that there is nothing that will take off the strain after a long day's work in the office or laboratory, as well as one or two hours of this work either after an early supper or before one. My own work was formerly done with a 5 x 7 Graflex and Verito lens, which was unfortunately lost, together with nearly all of my negatives, in the fire that destroyed our laboratories. Since then my work has been done with a 3¼ x 4¼ Graflex with a Smith lens. I think my latter combination preferable in many respects to the former, as the smaller camera is easier to carry around and the negatives may be readily enlarged if desired. The Graflex is without doubt the most convenient camera to use, but with care any other instrument may be used with perfect satisfaction.

As to the lens, I prefer the soft focus, as there is a quality to such a lens when correctly handled that is exactly what we desire to give the sense of atmosphere that should always be present in an outdoor portrait. I may take this occasion to point out that the harshness for which the anastigmat is so often blamed is not due to any inherent fault in the lens itself, but to underexposure and overdevelopment. If you are using an anastigmat and object to its sharp cutting of lines, try giving the full Watkins Meter time and develop to one or two classes lower on the Thermo Card. If you do not use this chart, develop for one half to two thirds your usual time in the usual developer. The chances are that

[illegible] W. L. MACASKELL

[illegible] lines of the anastigmat will have disappeared, and the [illegible] will be more truthfully rendered.

[illegible] materials is the Eastman Portrait Film. However I [illegible] and also the Panchromatic plate. It is hard to [illegible] The film is certainly superior in its scale of grada- [illegible] is the lack of color sensitiveness, which is [illegible]

[illegible] would be ideal if it does not work too contrasty, as it is [illegible] commercial use. Owing to the yellow light in the late [illegible] almost impossible to judge by the eye and an exposure [illegible] Give the full time called for by the meter and do [illegible] any doubt. Most portraits out-of-doors are under- [illegible]

[illegible] those seen against the light, some form of [illegible] direct sunlight from striking the lens. This may be [illegible] the plate holder, or hat, but it is better to [illegible] will make a good hood, that will fold up and be [illegible] to the proper length and coated with a dead black [illegible] lined on the inside with an opening in

OVER THE HORIZON—*Figure 5* W. L. MACASKELL

front of the lens just sufficient to be without the range of the lens.

Provided correct exposure has been given, development is not difficult. It is a matter of using a rather soft and slow working developer and taking the plate out at the proper stage. The great thing to guard against is overdevelopment. A rather soft delicate negative, almost flat, is what is desired to represent the subtle gradations of light and shade. Almost any developer will be suitable if handled rightly. Most of my work has been done with Rodinal or a special metol-borax formula. Since the introduction of desensitizing with phenol dyes I have used the Thermo system only as a guide and have judged the desensitized negative before the bright green light to determine when development is complete. Overdeveloped negatives should be reduced with ammonium persulphate.

The first problem in making the pictures is the situation. While no rules may be laid down for either lighting or backgrounds, as so many novel and varying effects may be obtained, the light overhead should be subdued in some manner and also that from one side, so that the greater part of the illumination comes from one side and to the front. If the effect is against the light, a white reflector will lighten the shadow side and reduce the contrast, which however will not be nearly so decided as is the case indoors where the illumination is not so well diffused. The background should never be important, which may be secured by proper attention to focusing, being careful not to focus the background as sharp as the figure, or so far out as to be woolly. A ground that is so woolly that noth-

THE OLD WINDJAMMER—*Figure 6* W. L. MACASKELL

ing definite as to its character can be distinguished is as objectionable as one that is too sharp. There is no reason why the background should be absolutely plain. I have found that the greater the extent of sunlit space behind the subject the better, as the background really recedes and there is relief and atmosphere. Things to watch for are nearby tree trunks and light filtering through the leaves, which cause the background to be distracting. I like to work on the campus of the college, where there are many large trees each at a good distance from the other. By working in and on the edge of the cast shadow a soft light is obtained and the expanse of sunlit grass gives a beautiful setting. As a general rule all summer subjects look best in a fairly high key. Low tones can hardly be so full of light as those of higher key.

The size of the figure on the plate is a matter of importance. In my opinion bust views are unsatisfactory and the three-quarter lengths only desirable at times. It must be left to the worker to determine whether the picture is intended as a portrait, or a figure study in an outdoor setting. Personally, I like to show as much of the setting as I can, so long as the figure does not lose its importance. I think this is a good rule to remember

GRAY DAWN—*Figure 7* W. L. MACASKELL

when the picture is to be a portrait. When the picture is intended as a figure study in an outdoor setting, the figure need not be so large and important, but the setting and the figure may be of about equal importance.

Do as little posing as possible. Sitters if left to themselves will become interested and unconscious of the camera unless you remind them, and selecting your opportunity you can make the exposure with a slow snap before the expression has died away. I have found that sitters are noticeably less self-conscious out doors and that posing is easier. Light clothes, worn loosely, and without any decided pattern, seem best suited to give the impression of summer.

As a final remark I wish to emphasize these three things. Be careful to retain all of the atmosphere, all of the sunlight and sense of the open that you can. Beware of strong contrasts, and underexposure and overdevelopment. Don't neglect to shoot anything that looks pleasing or original. Many prize pictures are accidental and were made for the attractiveness of the subject rather than because of the careful planning of its author.

O. C. REITER, PRESIDENT OF THE PITTSBURGH SALON

JOHN WALLACE GILLIES

This Reiter man unsuspectingly dropped into my studio this morning, little realizing that he was to be torn apart and laid open for the inspection of the photographic multitude. We are no respecters of persons, and the more dignified a position which is held, the more likely the holder is to be subjected to our impudence.

Mr. Reiter (Mr. for the last time) is one of the very dignified luminaries of photography. He is president of the Pittsburgh Salon, which as everybody is supposed to know, is the sportiest photographic exhibition of each year. That is to say there are more good workers represented in it, and probably more good prints shown, than in any other exhibition. The 'umble writer had the imagination to see that it was going to be the real thing when it was in its infancy, and was one of the first few regular members; that was a good guess.

The point is that friend Reiter has the bug for organizing things, and his attention happened to turn toward pictorial photography. This was of course a matter of chance, no matter what he tells you. Yet the bug had to be exercised, and so Reiter took it upon himself to organize the most refractory bunch of people ever gathered together; and on top of that he has kept them successfully herded for a period of years, more power to him.

It all began one day when Reiter and Porterfield got together and agreed on something that was an oddity to begin with. Having agreed that there ought to be a real annual exhibition, they began doing some work on the idea, with the result that we have at least one good annual exhibition for photographers to show their prints in each year, and strut about and tell their friends that "this is art." Painters had it, why should not photographers?

Once Reiter got married, and I think somebody gave him a Bullseye for a wedding present. Or maybe he bought it suspecting that it would come in handy after awhile. Presently when a daughter and heir appeared on the scene, he thought of the Bullseye camera, and began to make pictures of the baby. That is how he, and seven million others began photography. Me too.

Then he got an aesthetic streak, and began to talk art, and buy fuzzy lenses, and make gums, and fool with kallitype, and talk about exhibitions, and so on ad infinitum. Regular pictorial stuff. He bought eighty-five thousand cameras, seeking the one which would make pictures all by itself, and finally came to the ultimate conclusion reached by all real workers, that any good camera and any good lens would make a good picture, if placed in good hands. Some are better, of course, and the one that you can work best is generally the best; Mr. Reiter agrees with this all right, even if he didn't tell me so.

Today he uses the ubiquitous Graflex, as the grand army of workers do, with a Verito attached, I think a 9″. It is heavy, and he is getting lazy about lugging it around, and so does most of his work with a 2¼ x 4¼ Ica camera, and makes enlargements. He does not fuss with the cameras these days so much as he plays at his real game of keeping the interest in pictorial photography keyed up to such a pitch that all hands will do better at it and have some fun out of it, and in that lies his great value to photography.

The picture of the gentleman shows him to be a man of about forty-five years of age, slight, moderate height, and energetic as all hell. He must be, to herd ten thousand jealous pictorial workers together and make them behave. The picture was made with my latest love, a 16″ Graf Variable lens.

O. C. REITER
President of the Pittsburgh Salon

VACATION MISTAKES

J. C. ELSOM, M. D., MADISON, WIS.

THIS dissertation has to do with photographic mistakes only. Perhaps the article would be unnecessarily prolonged, if we dealt with all of the errors of every sort made during vacation time! And it shall deal with mistakes with which I have had personal experience; therefore I may speak with the greater assurance.

First of all, let me remark that a vacation is a very pleasant and a very necessary thing. Because of our busy, wearing, hustling everyday life there is absolute need of recreation, change of environment and occupation; we are all the better for such an experience, and our bodies and nerves and minds become better tuned for the activities which are to follow when we return to our usual work. But a vacation at its best does not mean *idleness*. Some sort of pleasurable activity should engage our time. I am ready to contend that if one has the photographic hobby, he is a happy man, and worthy of all congratulation. The more absorbing his interest, the better; let him be concerned for the moment with plates or films, and with diaphragms and exposures, and composition, and clouds, and lights and shadows. Let him go afield in the early morning hours, or late in the evening shadows, and tramp, or climb, and sweat; he will be all the better for it.

Again, vacation time should not necessarily mean the summer season only. A vacation in the splendid autumn, with its crisp days and tinted leaves, is much to be desired; or in winter, with frost and ice and snow, and the sparkle of wintry drapery on the landscape. At almost any time, or any season, we may with profit forsake our daily occupations for a brief period, and take along our companionable cameras.

But *what* camera shall we take? Which is best? These are questions often asked, and which I can never answer. There are many good cameras; some are best for one purpose, some for another. It's all in knowing your machine, its peculiarities of adjustment, its speed of lens and shutter, its limitations as well as its points of efficiency. In general, I would say we make a mistake to do our vacation work with a camera as large as post-card size. You have noticed the cost of the film, haven't you? And it's a bit heavy for a long tramp. Personally, I am of the opinion that there should be a city ordinance (or shall I say country ordinance?) against an amateur lugging arou nda camera larger than 3¼ x 4¼, and even with that, he should be looked upon with suspicion! Smaller sizes are even better. My vote will always be cast for the 2¼ x 3¼ size, for many reasons. It goes into your hip pocket easily; it is inconspicuous, it is economical in operation, it makes a contact print not unpleasantly small, and enlargements that are as fine as could be desired; its size is admirable for lantern slides, its depth of focus is wonderful, and altogether it is convenient and portable! But do not make the mistake of getting a cheap, poorly corrected lens, and an inefficient shutter. The better the lens, the happier you will be when you develop your negatives, and the more efficient will be your work. Get the good lens and shutter, whether you can afford it or not! Borrow the money! If you can borrow enough for the *f*:4.5 anastigmat and shutter that works up to 1-250 or 1-300 second, do it. If not, get a lens working at *f*:6.3, or at least at *f*:7.7. And get a shutter that gives you *slow* exposures, as well as fast. One-half second, one-fifth, one-tenth, are all useful exposures on occasion. That added time means all the difference in the world, and often changes failure into success. I do not mean to say that you cannot

DAISIES AND WILD BARLEY J. C. ELSOM

do good work with a little fixed-focus box, with single lens. You can, if you know how. But you must be expert. Those cheap cameras are best handled by the experienced workers, who know their limitations, and who are skilful in matters of exposure and composition. If you have such a machine, don't make these mistakes: snap shots in the shade, or on dark days; attempts at portraits three or four feet away from your subject; athletic pictures or rapidly moving objects near at hand: and do be careful how you press your shutter! I have seen people do it with a bang and a jiggle, with a fearful movement of the camera itself; and I have seen in my mind's eye that blurred and fuzzy film that resulted from such carelessness. Release your shutter very slowly, hold your breath, say your prayers, do anything, but *don't* move the camera!

One vacation mistake is in attempting to include in the picture all things that are in the heavens above, the earth beneath, and the waters under the earth! There is such a fine view, you think! There are the mountains five miles distant, and the intervening country, with trees and the river over there, and cattle grazing in the meadow, and a fine

A HIKE ON A WISCONSIN ROADWAY J. C. ELSOM

AT THE EDGE OF THE CLIFF J. C. ELSOM

THE JOYS OF BOYHOOD J. C. ELSOM

house or so in the field to the right, and maybe your friend sitting on the fence a hundred yards distant. It all looks fine! But in your picture there is a distinct disappointment, because there are so many things, and none of them hold any outstanding interest. The mountains are miserably small, things are dwarfed and jumbled, and you think maybe your camera is a poor one. But really it wasn't the camera's fault. *Simplicity in composition is the key-note of success.* So don't make the mistake of trying to include on one picture all you saw during your vacation. Maybe a snap shot of the grazing cows near the river bank, at a reasonable distance from your camera, would be a pleasing picture. A "close-up" of your friend on the fence might be well enough, and perhaps a nearer view of the mountains when they were overtopped by clouds, or in the morning mist, might please you — but don't try them all at once. Amateurs are not the only ones who make this common mistake. Recently I was amused at a professional who had this desire to include as much as possible in his pictures. The particular subject was a swimming race. His 8 x 10 camera was all set at his chosen viewpoint. His lens took in the great crowd of spectators, the piers stretching far out into the water, the lake itself, its distant shore, a sailboat or two, and — the swimmers! But the swimmers were insignificant little dots on the troubled waters. A wise amateur was taking the same scene. With a small camera, his position was on the pier near the scene of action His resulting film showed the spray made by the swimmers' arms and legs, and their faces, contorted with the athletic effort. There was just a bit of water and waves, and the participants. The amateur's picture appeared in the newspapers the next morning, and not the professional's.

Don't make the vacation mistake of "shooting up" anything and everything. Really *plan* your pictures. If you are taking a group of your friends, is it not more pleasing to have them naturally arranged conversing with each other, or engaged in some characteristic activity, rather than have them stiff and formal, gazing directly at your camera with strained and painful expressions? It is difficult to take large groups, anyway, and make

WOODS IN SPRINGTIME H. J. BRENNAN

Second Prize, June Junior Competition

pleasing pictures. Better take two or three at a time in characteristic and natural and informal pose. These are the things that you will care for as the months and years go by.

Again, I would warn my friends against the mistake of letting others develop and print for you. Perhaps in some cases this is justifiable, of course; but if you want all of the joy of photography, and to give yourself a permanent interest in it, *do your own work.* After a reasonable apprenticeship, you can do it better, any way. No professional can ever be as interested in your films and prints as you are yourself; nor will even the best of them exert the care with your work that you are likely to give to it yourself. Then there is the satisfaction of creating, as it were, your own pictures and putting into them your own individuality. I would say that you should mix your own developers, and weigh out the chemicals for the various solutions, because even in this there is a pleasure, to say nothing of the advantage of the lessened cost. And then, there comes to us the sense of accomplishment and our knowledge quickly becomes broadened.

Haven't we all heard the remark in brilliantly clear weather: "What a fine day this is for a picture?" The air is so clear, everything is so distinct and sparkling! Here we are apt to commit one of the vacation errors. Pictures taken in the broad open sunshine have their place, of course; but really artistic effects are most often secured in subdued light, often at sunrise, or sunset, in the light mists of spring or autumn, sometimes in a snowstorm, or during a light summer shower, when perhaps the clouds are clearing. We do well to watch for these unusual lighting effects and record them on our films. Pictures against the sun are often extremely attractive, but in order to take them, we must guard against the striking of the direct rays of sunlight on our lens. A lens shade is easily constructed, and should be always used in exposures against strong light. It prevents the

THE ENCHANTED POOL PAUL E. GUILLOT

Third Prize, June Senior Competition

inevitable fogging and flare caused by reflected light within the lens.

The most successful pictures are those in which there is a note of human interest. This is true of the great paintings of the old masters; and equally true of the exhibition photographs which appear in our photographic salons. The most humble sort of life and the commonest occupations may be recorded photographically so as to possess a lasting interest. The inclusion of a figure or two, suitably placed, adds to the attractiveness of most landscape work. Often the photographer himself may appear in his picture by the use of the automatic shutter release which will allow plenty of time for the accomplishment of this result. This little apparatus, by the way, is a very useful adjunct to our equipment. Often I have made use of it by attaching it to my camera, placing the camera on a light tripod, and holding the tripod high overhead, when working in street crowds or other places where elevation of the the camera was desired. Of course, the result is more or less guess work, but it produces pictures which otherwise might not be obtained.

Do not make the mistake of producing from your vacation films only contact prints. The beauty of the enlargement is often surprising. The enlarging process is not difficult, and is one of the most interesting of the photographic processes. Enlargements from the small negative may easily be made up to 8 x 10 in size, and since this is so, I often wonder why we so universally use the large and expensive film. Thus again, I argue for the 2¼ x 3¼ camera, or even the vest-pocket size, especially when the equipment consists of the wonderfully corrected anastigmats of the present day. The foreign manufacturers seem to specialize more than we in these miniature, but marvelously efficient cameras. Some of them are very expensive, but it really seems that one may accomplish with them almost any photographic feat.

Finally, let us be ready always to profit by our mistakes. Even the best of us make them often; but we should not be discouraged on this account. And there are so many points at which one may commit an error! But it is stimulating to master difficulties, to do the hard things, and to work our way toward photographic success. There is inspiration in photography of the best sort; and pure joy comes to the worker who learns to express himself by means of lens and film and print. It is, besides, the recreation *de luxe.*

THE AMATEUR AND HIS CAMERA

E. A. ELLSWORTH

THE average amateur, by which term is included a great majority of the photographers in the land, and to whom the manufacturer of outfits and supplies is largely indebted for the scope and magnitude of his business, is first attracted in his new pursuit by the entire universe. He rushes to and fro, hither and yon — mostly yon. He is possessed of an idea that "where he is not" is where he should be to secure pictures of real worth. In his opinion "where he is, is not," photographically speaking.

So he hastens thither.

He seeks out high hills and mountain tops. His soul swells to the sublime panorama spread before his vision. Hill and dale, lake and stream, combine to intoxicate his brain. The picture desire causes him to function rapidly and repeatedly, North, South, East, West. Again, he seeks low vales the better to depict the majesty of the mountains, grim old veterans with heads climbing away up into the regions of thunder.

And with his peace of mind all is well — until his negatives are developed. Then, beginning at once, his disappointment is as limitless as the realms of space he has tried to capture. Prints from those negatives resemble what he saw as nearly as a jackrabbit resembles a — jackass. True, both of the latter have long ears, four cylinders of locomotive power, and are covered with hair. But there are certain discrepancies.

However, our amateur is a persistent cuss. His mind still functions on a single track. "Ha!" says he, "these old home surroundings are too tame. I must go beyond, get something famed throughout the land, something not commonplace." His rush becomes a consuming passion. His results repeat themselves *ad infinitum.*

One day, while looking at his viewfinder, he unintentionally trips his shutter on a scene the extreme distance in which is "tied" to the very ground 'neath his shoes by a middle distance and foreground with meandering road, fences, and a scattering of trees along the road. One or two of the trees are quite near, and beneath their foliage a farmhouse is seen some distance away. A very ordinary view, and he did not intend to snap it. He tells this to his Creator — and the surrounding atmosphere — to an accompaniment of much calisthenics and more brimstone. Judging by his vehemence this single "spoiled' negative is worth a king's ransom. Straightway his zest for pictures is gone. He hurries home and puts his camera "on the shelf."

After dining, however, his curiosity overcomes his goat. He develops that spoiled

THE CHECKER ENTHUSIASTS ELEANOR L. SMITH
Second Prize, June Senior Competition

negative "just to see what's on it anyway" — and meets with a joyous surprise. "That darned thing isn't spoiled," says he, sort of amazed-like. "I'll make a print from it, right away, before drying." He spends the remainder of a long evening looking at that print and groping in mental darkness. He knows he's learned something, but it isn't at all clear what that something is. He is unable to lay violent hands on it, drag it forth into the clear light of reason and name it. However, our amateur is a *persistent* cuss. He knows there's something hidden and he proposes to find it. He invokes the aid of Jimmy pipe, boon companion of long standing, and together they lay down many smoke-screens at the expense of much pipe-filler and the utter ruination of the surrounding atmosphere for breathing purposes. Surely nothing can withstand these vigorous and repeated assaults indefinitely. He feels that even he can't stand them in combination and bids Jimmy good-night. As he is putting out the cat for the night the idea leaps at him, through the open door as it were, and assaults him heavily between the eyes. "Foreground," he bawls, and then for the next several minutes his wife, whom his last bit of asininity has awakened from sound slumber, does the bawling.

His last conscious thought is something like this: *To make a good picture it is not necessary that the nearest part of the included view shall be from a quarter-mile to several miles distant. It may begin here and now rather than there and then.*

Being an amateur (and who ever knew an amateur to be satisfied with doing anything once only?) he stages a few "repeats." Things he's been almost stumbling over now claim his attention exclusively. There are those who can, and do, confine their operations to some point or points between extremes. But an amateur photographer has none of this within his midst. He is so constructed that the instant of breaking contact with one extreme finds him banging just as eagerly at the one diametrically opposite.

From producing pictures containing nothing but extreme distances he now devotes himself to foregrounds — and eventually comes to realize, when viewing his latest efforts, more or less of that "shut-in feeling" belonging particularly to foregrounds only. He tries to compare his original discovery with later results and analyze the cause of failure in the latter, but is unable to get any satisfaction. His eyes have grown blind to extreme distances, and, though the print that first startled him contains such a plane, he doesn't sense its effect. His mind is too busy with the *chief attraction* in that print — the road, etc., in the foreground leading to the farmhouse in the middle distance.

After a fairly extensive series of non-satisfying "foreground only" effects have been collected, our amateur conceives nothing short of a mental triumph. He will again trip his shutter by accident. That's what he'll do. He'll show this thing what kind of fellow he is, b'gosh. And in the supreme joy of this conception he sets forth wholly unconscious of the fact that a deliberate act is *never* an accident.

His scheme works beautifully. All the way home he tells himself that this negative will be far superior to his first masterpiece, for didn't he originate and engineer this plan from A to Izzard all by himself. Later, through the developer he watches the growth of something amazing, to say the least. What in thunder is that thing occupying practically the entire lower quarter of his negative? Looks like it might be some sort of cyclone, only there seems to be — yes, sure enough, there *are* legs and a tail on it, and no decent, self-respecting cyclone ever wore such appendages.

In due time he solves the mystery. That big dog, with which he spent a minute or two at boyish play just prior to the "accident" of tripping his shutter, must have rushed across the foreground, "close-up," at the psychological moment. He and the dog didn't stop playing simultaneously. Result: One perfectly beautiful farm scene — country lane deeply rutted, stonewalls, trees, white farmhouse nestling in a miniature valley — completely ruined by one large, nearby blur of rapidly-moving dog. By now, however, he has enough sense and imagination to realize that without said blur this would, indeed, be a picture.

Once more an idea takes foul advantage and smites him strongly when he isn't looking. He resents such familiarities being taken with his person, but in course of time, having cooled off somewhat from the white heat of indignation and reflected slightly in excess of somewhat, he achieves another mental triumph, this time the real thing.

"*Ordinarily,*" says he, "*to be successful a picture should contain three planes — foreground, middle and extreme distance.*" He rolls this under his tongue, likes its flavor, but sensing that it is incomplete elaborates further: "*Also, ordinarily*" (he likes this qualifier), "*the chief interest should appear in the foreground or middle distance — if the latter, then the foreground should be of such nature as to lead the eye pleasingly to the chief interest without*

FIVE MONTHS OLD — EDWARDS H. SMITH

First Prize, June Junior Competition

drawing undue attention to itself." This he digests thoroughly and decides in favor of still further elaboration. He feels that he *must* have *something* in the rule he's formulating to take care of the *exceptions* which he knows are the accompaniment of every rule. "*Of course*" (he feels the strength of this admission), "*a picture may have but one plane, or two, and still be a success. In such instances, however, the successful result is much more likely to be in spite of this act than because of it.*"

Now he visualizes a framework on which to hang his rule. Something suggests a bridge with its two approaches. "This," says he, pointing to the nearer approach, "is the foreground, the bridge itself the middle distance, and the farther approach the extreme distance. Using any *one* of them alone, the beginning or end, or both, is — rather abrupt. Using any *two* is but little better. But when they're *all* in place I know I can get across without undue jolts."

After carefully reviewing his rule, and his bridge-approaches illustration of it, he executes a Solomon Islands dance (he imagines that's what it is). "For," says he, justifying his dancing proclivities, "this rule doesn't begin to cover the broad field to photography, but it does contain enough of common sense to keep me busy using it in landscape work for a long, long time. And when I've mastered it, gotten so I can bring home bacon every time and not the odor only, perhaps I'll be able to formulate another rule. Anyway it ought to help me avoid a bridge without means of getting on or off it, or such means without any bridge."

PHOTOGRAPHIC EQUIPMENT FOR THE ADVANCED AMATEUR

HERBERT C. MCKAY

MANY amateur photographers in this country, like myself, undoubtedly do enough work to justify semi-professional equipment, yet do not feel that they are able to spend several hundred dollars for such equipment as is placed on the market by various manufacturers.

Some of the equipment described in this article has features borrowed from patented professional machines and cannot therefore be built or used commercially. These basic ideas have been altered to suit circumstances, and no doubt each amateur who constructs one or more of these machines will alter them to suit himself. For this reason I have omitted dimensions. The details of construction will be clear to all, and as each machine may be altered to any size or capacity, such details will be left to the individual builder.

First we shall take up the print dryer. Fig. 1 gives us a side elevation of this machine. A is the crank by which the belt is moved forward one unit each time a row of pictures is laid on the belt. B is the drive roller, C idler rollers, D the main drum which is heated to dry the pictures. E is the axle of this drum, F the tension spring by which the belt is kept tight and the belt caused to run straight, G the bolt to which the spring is fastened, and H is the belt itself. This belt is made of heavy canvas, of the width desired; I use 30 inch. The correct length is measured around the various rollers and the drum. The belt is then sewn together, care being taken that it is kept perfectly straight during sewing. The belt is then placed on the machine, the idlers being removed for this purpose (it is best to have them on easily removable pivots). Fig. 2 shows the front view of this machine: 1 is the crank, 2 the drum, 3 a sheet iron cover, with pipe leading into the hollow end of the drum, this cover being placed over an incubator lamp, 4, and ventilated by air inlets, 5. This lamp provides the heat by which the prints are dried.

It is evident from the foregoing that provision must be made for the entrance of the heater pipe in the end of the revolving drum. In order to do this, three forms are provided. One (Form A, Fig. 3), is made as illustrated, for the end of the drum opposite the heater. Note that the openings, four in number, are comparatively small. Another is made similar but of narrower material, the cross bars not more than 1½ inches wide, with large openings, while the third, Form B, is a shell with no cross arms. The two Forms A support the drum on the axle, the heavier one being placed at the end of the drum, and the second about ten inches from the opposite end, while Form B is placed at the opposite end of the drum from the heavy Form A to support the edge of the drum. The heater pipe is introduced through the end of the drum where Form B offers no obstruction in the way of spokes or cross bars. The interior Form A is made light so that there will be the slightest possible obstruction to the passage of the heated air into the farther end of the drum, while the small openings in the heavy Form A provide ventilation and make circulation possible. Fig. 4 presents an interior of the drum. The surface material is optional; galvanized sheet iron has proven satisfactory to us. Fig. 6 shows the direction of travel of the belt.

After thorough washing the prints are pressed between photo blotters to remove superfluous moisture, then laid *face down* on the belt, as the operator sits in front of the machine

DAY'S END
FRANCIS O. LIBBY
Pittsburgh Salon, 1922

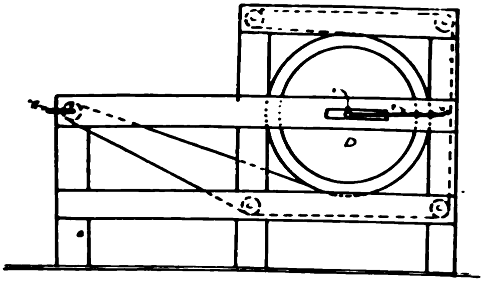


Fig 1.

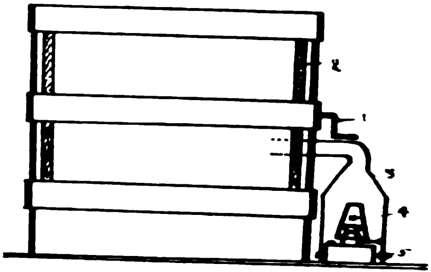


Fig 8

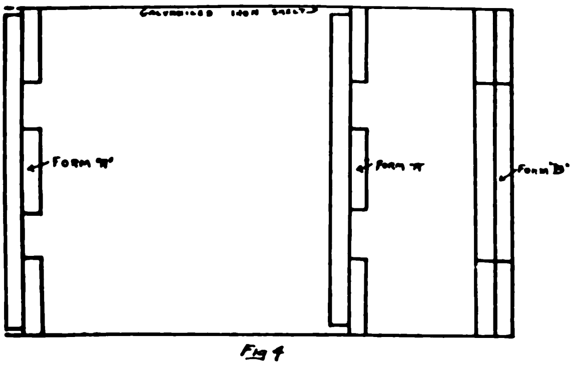


Fig 4

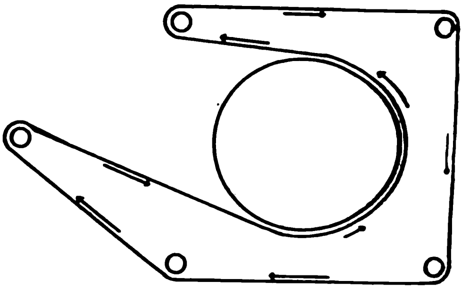


Fig 6

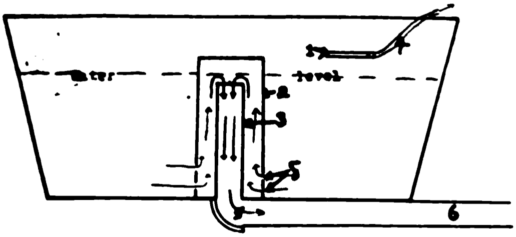
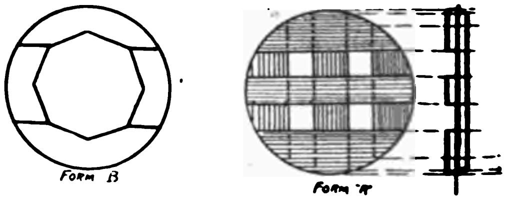


Fig. 7



Form B

Form "A"

Fig 3

with the crank at his right. When a row of prints has been laid across the width of the belt, the crank is turned, bringing a fresh strip of belt in front of the operator. It is evident that as this operation is repeated the prints will eventually travel with the belt around the heated surface of the drum, being delivered in front of the operator at the top of the drum. If the prints do not dry thoroughly the first time they may be returned to the dryer. It is understood, however, that this machine does not deliver prints bone dry, nor is it intended that it should, but the prints should be dry enough to be handled easily and be stacked without danger of sticking together.

We shall now take up the print-washer. It seems that we are moving backward, but as each machine will be made separately, I do not believe that the order in which they are presented will make very much difference.

The print washer is the simplest piece in the entire outfit: The materials necessary are: a small washtub, two pieces of one or one and one-half inch pipe, an elbow and a coffee can. A piece of pipe two thirds as long as the depth of the tub is screwed into the elbow, while the other piece of pipe whose length is four inches greater than the radius of the bottom of the tub is screwed into the other inlet of the elbow. A hole is cut through

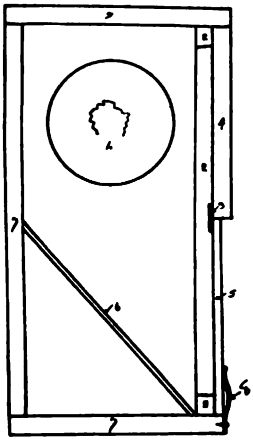
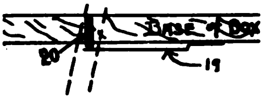


Fig 8



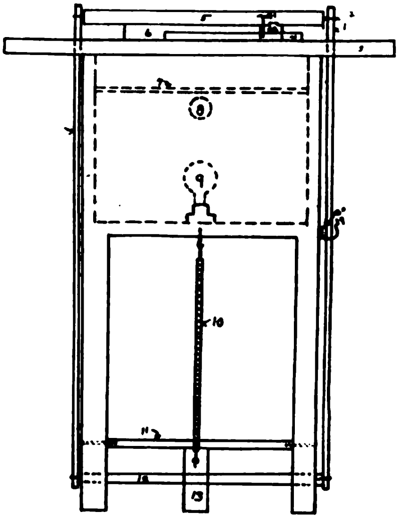


Fig 9

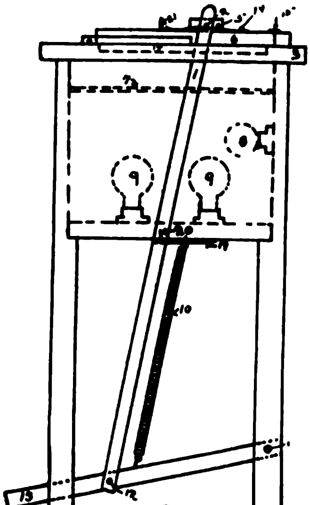


Fig 10

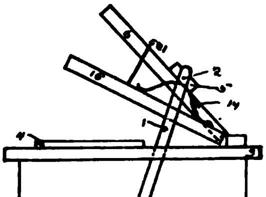


Fig 11.

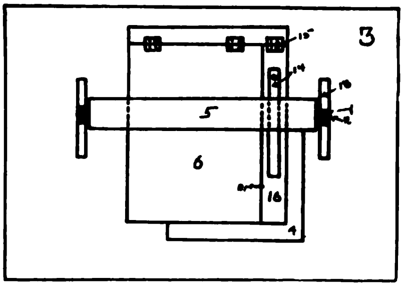


Fig 12

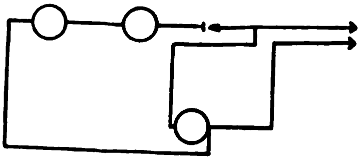


Fig 13

the bottom of the tub, centrally located, just large enough for the shorter pipe to pass through. The shoulder of the elbow is now soldered to the bottom. This provides an overflow outlet for all water higher than two-thirds the depth of the tub. The coffee can or other can must be an inch or so higher than the pipe which rises from the bottom of the tub. A series of holes are punched around the open end of the can. This is then inverted over the pipe and soldered in place. Referring to Fig. 7 the following parts will be seen: 1 is a nozzle of some material, thin brass tube serving very well, soldered to the inside of the tub, while 4 is a rubber hose connecting this *inlet* pipe with the water supply. The water coming through this nozzle will at once set up a current around the circumference of the tub, which is very good for washing the prints. The water will rise inside the tin can 2, until it reaches the top of the pipe 3, after which the level of the water will remain constant. The particular advantage of a washer of this type is the fact that a solution of hypo is heavier than water, so that in the old style overflow washers it was a long time until the last of the hypo was eliminated, but as shown by the arrows of direction in Fig. 7 the overflow is all taken from the bottom through the holes 8, thence carried up inside the can 2, and out through the pipe 3, elbow 5, and second pipe 6.

One of the most necessary adjuncts of the darkroom is the developing light. For years any red light was considered safe, and to a certain extent it was with the old slow emulsion, but in these days of orthochromatic and panchromatic plates a scientifically correct safe light is necessary, orange for bromide paper, red for plates and orthochromatic plates, green for panchromatic plates, etc. These may be obtained at slight cost from any reliable dealer. The objection to the universal use of these lights is the case, which costs several dollars. Fig. 8 presents a cross section which with the key is self explanatory: 1 is the electric globe, 2 a ledge about one fourth inch square running around the face of box against which both safelight screen and door rest. This ledge should be faced with black velvet ribbon. A strip of velvet ribbon 3, is fastened to the lower edge of the door 4, to provide a light-tight joint between safelight and door. The door 4, is removable for replacement of the bulb. It is hinged and held closed by small metal buttons. The safelight screen 5, consists of two sheets of glass with the non-actinic material between; 6 is a white cardboard reflecting screen and 7 is the box itself; 8 is the spring which holds the safelight screen in position. It will be noticed that only reflected light reaches the work-table if the lamp box is placed on the table while working.

We shall now consider the printer. This printer is foot-operated, with an automatic switch which cuts the white lights in when the pressure board descends. Another feature of this printer is the auxiliary pressure board or "finger" which descends in advance the pressure board and holds film, mask and paper in contact while the hand is removed, after which the main board descends and switches on the light. A guide is furnished so that mask, negative and paper may be quickly and easily centered.

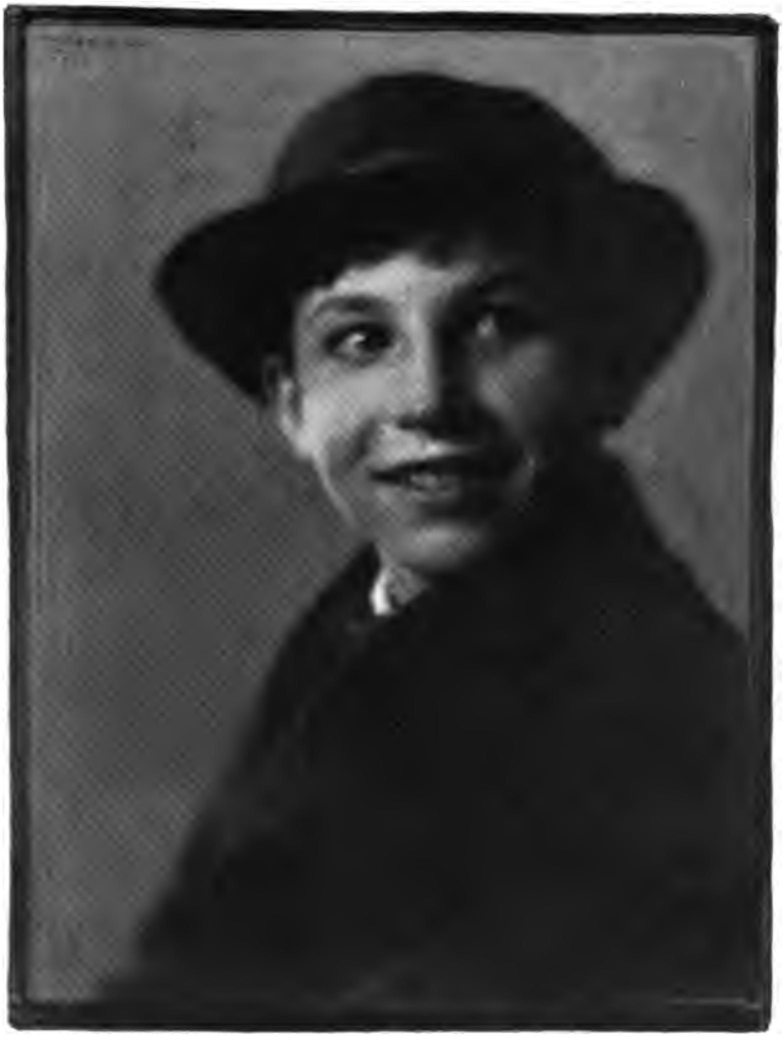
Fig. 9 shows the front of the printer: 1 is the draw bar which pulls the pressure board down when the pedal 13 is depressed. Upon releasing, the pressure spring 10 lifts the pedal and rigid draw bar 1, and so raises the pressure board 6 and auxiliary 22. The pressure is exerted on the pressure board 6 by the cross bar 5, which is pivoted to the two draw-bars, 1. The board is hinged at the rear and not divided as are the backs of printing frames. A cross bar 11 between the two back legs provides a fulcrum for the pedal 13, which is connected to the draw bars by the cross arm 12. As the draw bar descends, the switch 19, 20 is closed, lighting the white lights 9, while the red light 8 burns all the time. Number 3 is the top of the table and 4 is the paper guide.

Fig. 10 gives the side view. Numbers are as follows: 1 is the draw-bar, 2 draw-bar pivot which connects it to cross arm 5, 3 is the top of the printing table, 4 the paper guide and centering guide, 5 the cross arm which pulls pressure board down, 6 the pressure board (this side presents auxiliary finger only), 7 is the ground glass diffusing screen, 8 the red light, 9-9 white lights, 10 coil spring for lifting pressure board, 11 fulcrum pivot, 12 lower draw bar pivot, 13 pedal, 14 auxiliary finger spring, 15 pressure board hinge, 19, 20 switch, 21 auxiliary finger lifting catch.

Fig. 11 gives detailed drawings of the pressure board and switch. In the figure of the pressure board the following will be noted as the action in rising upon release of pressure on the pedal. Draw-bars 1 are lifted, in turn lifting cross bar 5 and pressure board 6. Auxiliary finger 16 is hinged independently, and does not rise until the surface of pressure board 6 engages hook 21, which in turn lifts the auxiliary finger 16. In *descending*, the following action takes place. Draw bars 1 are depressed, drawing down cross bar 5, against whose lower surface rests the spring 14. This spring forces the auxiliary finger down uniformly with the pressure board, but when the finger comes to rest on the surface of the printing plate, the spring, being fastened only at one end, slides along the finger and becomes flattened as the pressure board proper descends. Thus it will be seen that the finger engages the paper and negative under pressure for an appreciable interval before the main board descends.

The detail of the switch is self explanatory. As draw bar 1, to which plunger 20 is

ROSHANARA
MARCIA STEIN



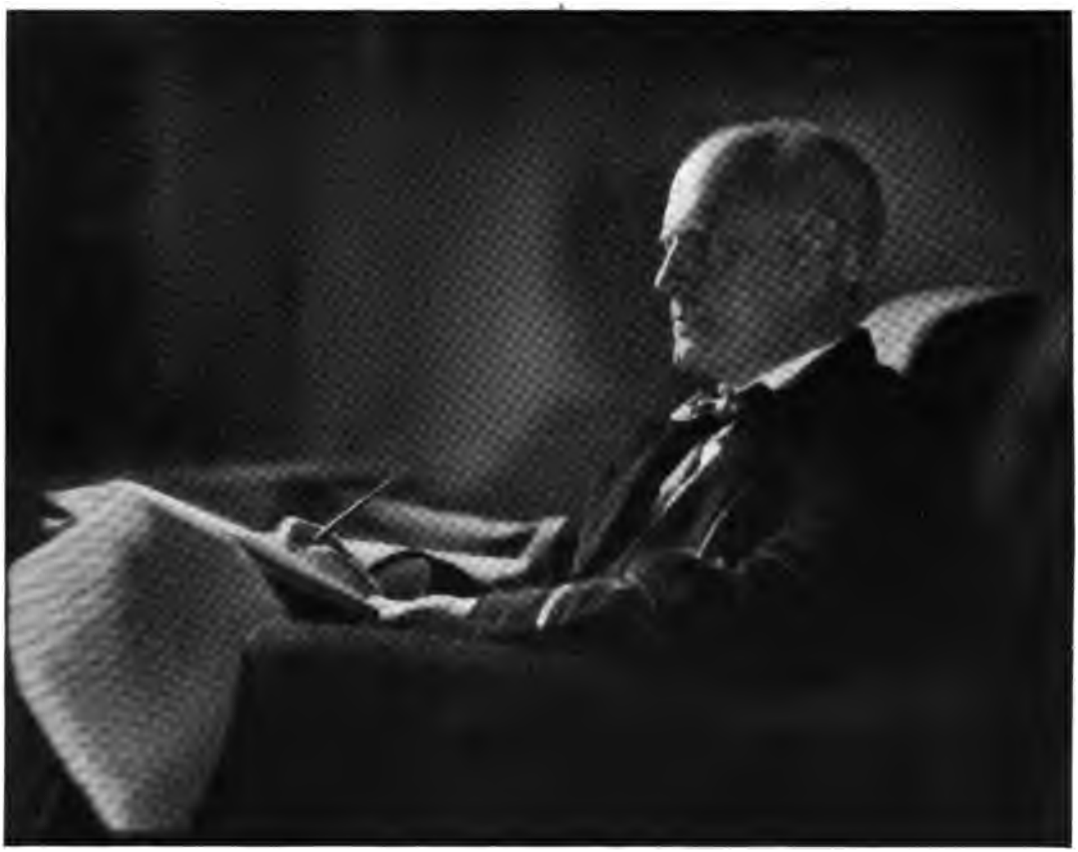
JOHN HUGO VAN WADENOYEN, JR., F.R.P.S.

Honorable Mention, Second Annual Competition

firmly attached, descends, contact is made between plunger 2c and spring 19, to which pieces the wires are connected. These are adjusted so that contact is not made until just before the pressure board comes to rest.

Fig. 12 shows the top of the printing table. As the action has been explained it will be only necessary to name the parts: 1, draw bars; 2, draw-bar pivots; 3, top of printing table: 4, paper and centering guide, which is only a square whose legs are made of 1" x 2" inch material set back 1-8 inch from the printing surface, and inside which the pressure boards rest snugly; 5, the cross bar which exerts working pressure on pressure board; 6, pressure board; 14, auxiliary finger spring; 15, hinges; 16, auxiliary finger; 18, slot through which draw bars act; 21, auxiliary finger lifting hook. Fig. 13 gives wiring diagram for the printer.

The tanks for development are best purchased from manufacturer, or else made by a cabinet maker who can double rabbet all joints. Unless more than a dozen rolls a day



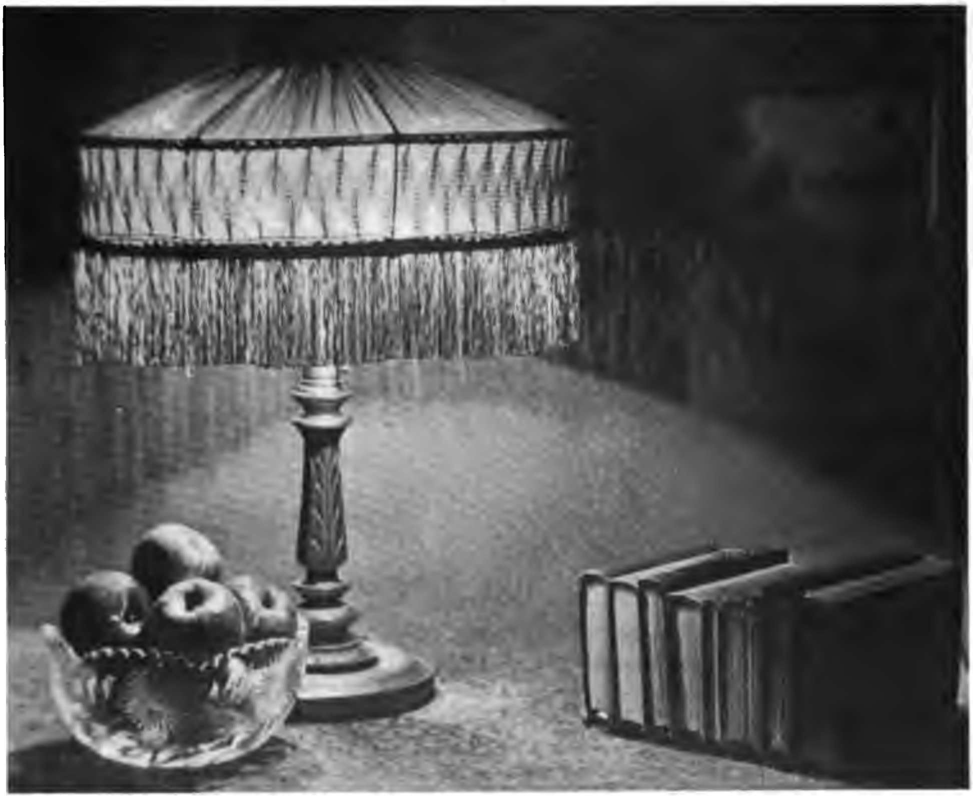
JOHN GALSWORTHY E. O. HOPPE

are to be developed, the daylight tank is simplest; for plates, the Core rack system cannot be improved upon. For print washing, a vertical tank with inlet at top and outlet at bottom with siphon is the best and simplest. For drying films, a cabinet is constructed upon a lath framework with cloth sides. A metal top with a stovepipe leading into a chimney provides ventilation, while an electric fan is set horizontally in the bottom. The cabinet is entirely closed except for one opening near the fan for inlet and the pipe outlet. A cloth-covered door gives access to the interior. This door should take up all one side of the cabinet. Films are suspended inside, the door closed and the fan started.

For developing and fixing prints the old trays serve best.

The above article gives an idea as to the tank for developing film, the tank for washing (fixing being done in tank similar to that for developer) and cabinet for drying film, a printer for printing, a washer for washing the prints and a dryer for the same. With this equipment the ambitious amateur can make a great deal of money on the side from finishing for other people. The man who wants to start in a small way in the professional game will also find one or more of these devices useful and cheap.

In the near future I hope to publish an article which will give directions for building studio equipment for the beginner and the man who cannot afford to spend a small fortune on the necessary outfit to begin portraiture.



STILL LIFE ARTHUR T. HENRICI

"STILL LIFE"

This is a very unusual picture and an unusually successful one at that. The exposure was made entirely by the light of the lamp shown in the picture, with two 75-watt nitrogen bulbs. There is not the slightest sign of any halation, although the exposure was fifteen minutes at *f*:16. This, no doubt was due to the use of non-halation plates. The arrangement of the subject is very pleasing and gives a well balanced picture, while, technically, it is highly successful. The textures are well suggested and the tones throughout are particularly fine. Other data are: 3¼ x 4¼ Graphic camera, rapid rectilinear lens of 8¾ inches focal length, Hammer plate, orthochromatic non-halation, used in conjunction with a three-times filter, developed with pyro in a tank, print on Haloid Enlarging linen buff, developed with amidol and redeveloped with Royal redeveloper.

ENLARGED NEGATIVES BY REVERSAL

Negatives made direct by chemical reversal save one step in the making of enlarged negatives. From the small negative we throw up an enlarged positive, develop very fully right through to the back, using acid diamidophenol developer. Wash out the developer with acetic acid and water and place in a solution of potassium bichromate 1.5 grams, sulphuric acid 15 grams, water 100 cubic centimeters. Rinse, then use sodium sulphite solution for fifteen minutes, wash and redevelop. The black silver image first produced dissolves in the bleaching bath, the undeveloped silver being untouched. The second development blackens this undeveloped silver, producing a negative image.

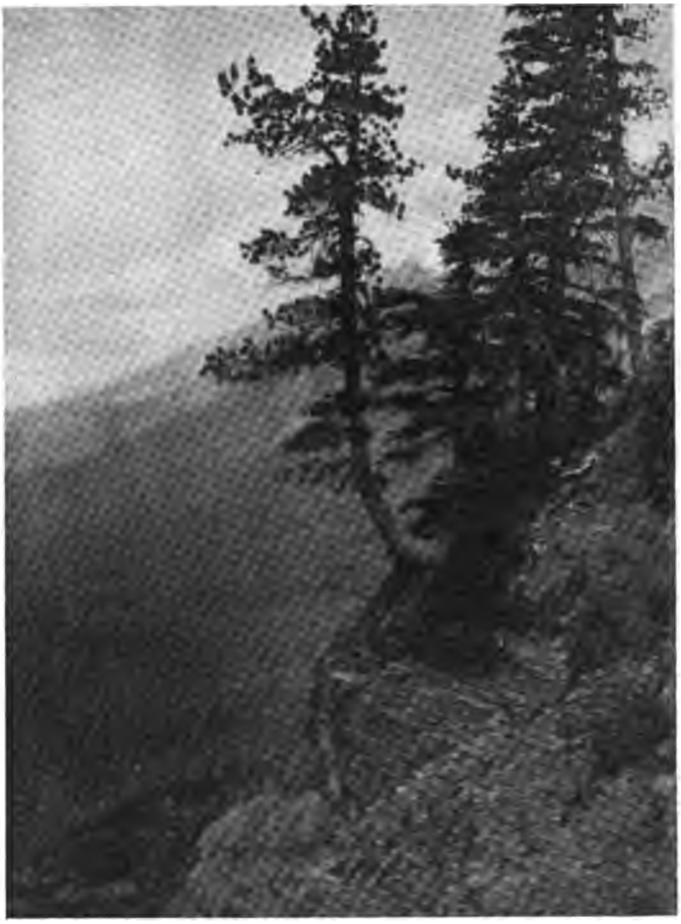
Another reversing solution is copper sulphate, 9 grams, sodium chloride, 22 grains, water, 150 cubic centimeters. Sodium bisulphite dissolves the image but does not touch the silver salts. Wash the plate and redevelop. After bleaching and dissolving away the original negative image, it is, of course, necessary to fog the remaining silver before the redeveloping solution is used.

Such negatives are optically reversed, that is to say, the image looked at through the glass side faces the opposite way as compared with the original small negative. To obviate this, the small negative can of course, be placed in the enlarging carrier backwards instead of in the usual way.

These negatives are useful for carbon printing or for photo-mechanical work in which they save a transfer process or the use of a prism. A positive made by contact can also be turned into a reversed negative by the same process.

SUBSTITUTES FOR SENSITIZING DYES

The shortage of sensitizing dyes for color sensitive emulsions during the war period brought out some interesting substitutes, one of which was chlorophyll, a pigment found in growing vegetation. A very



WHERE NATURE SPEAKS FROM RUGGED PEAKS

CECELIA N. EARECKSON

good product was obtained from the leaves of the common garden pansy which served very well in replacing the red sensitizers.

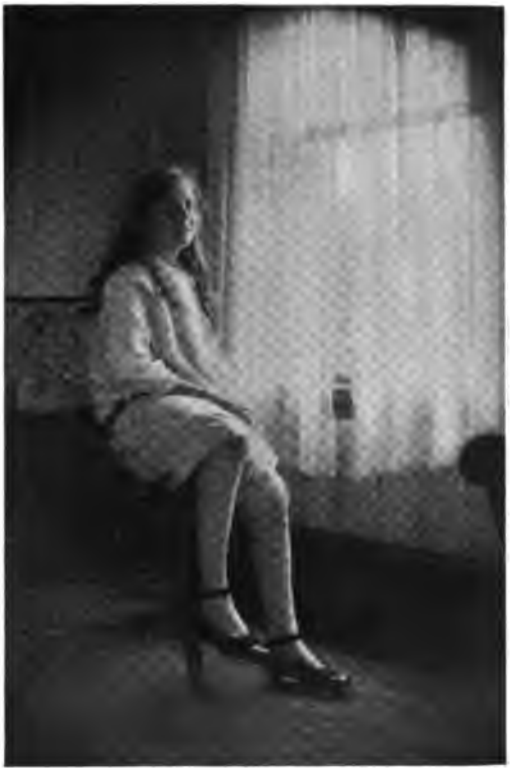
A British patent was taken out some years ago for a method of desensitizing panchromatic plates so as to allow of the use of red light for their development just as if they were ordinary plates. A solution of potassium nitrite and acetic acid was used, or sulphurous acid in water.

WHERE NATURE SPEAKS FROM RUGGED PEAKS

This is a very striking picture and is an unusually fine rendering of an impressive subject. The distant planes are well suggested, the sky is properly treated and the color and general technical handling of the print are unusually good. We know from experience how difficult it is to get just the point of view one wants in making pictures of this sort — in fact, it is often impossible to get the picture from just the best spot on account of inaccessibility and one is forced to accept an arrangement or composition that is just short of what one thinks is the best. This, we think, is what happened in this case. We believe the maker of the picture will agree with us that the trees are nct placed just exactly where they ought to be in the picture space and that some improvement is possible in the arrangement of the diagonal line of the foreground. All the same, it is a highly successful picture and one of which its maker may well be proud. Made in Glacier National Park, Montana, Eastman Folding Pocket Kodak, 3¼ x 4¼, R. R. lens of 4⅞ inches' focal length, used at *f*:22, exposure of 1-10 second made in sunlight at 2 P. M. in August. The film was developed in pyro and the print is an enlargement on P. M. C. No. 7.

WATER FOR SOLUTIONS

In making up solutions, use boiled water if distilled water is not available. Much of the deterioration of solutions comes from air that is dissolved in water. Boiled water is practically free from air and solutions made with boiled water do not oxidize as readily as solutions made with water that has not been boiled or distilled.



MILDRED ALEXANDER MURRAY

MILDRED

This is an unusually pleasing portrait and is remarkable for its excellent rendering of tones. A more careful arrangement of the lighting might have shown the features to better advantage, but this lighting is interesting and is quite effective at a little distance. If the child had been placed a little farther back, however, a rather better lighting might have been secured. We do not altogether care for the cutting off of the corners of the picture and we think a little trimming from the top and the right-hand side would be of some advantage. Even the additional focal length obtained by using only the rear combination of the lens was not quite enough to avoid a suggestion of abrupt perspective. Made with a 4 x 5 Premo, back combination only of Bausch and Lomb lens giving a focal length of about 8 inches, stop *f*:8, bright sunlight outdoors, January, 2 P. M. Cramer Medium Iso plate developed with Amidol in tray, exposure about 9 seconds, enlargement on P. M. C. No. 2.

HINTS ON PHOTOGRAPHING AUTOMOBILES

It is frequently desired, when an unusually good job is turned out, to photograph automobiles and commercial trucks, the photographs sometimes being destined for publication in magazines and newspapers but more often for the reference files of the factory or for the salesman's sample case.

A few hints on photographing automobiles, trucks, carriages and wagons, are printed below, and it would be well, when taking a picture of this kind, to note the points covered in this article. The hints were written by an expert photographer who obtains uniformly good results in photographing motor cars.

1. The background of the automobile should be light, so that the automobile stands out in bold contrast. An unobstructed sky is probably the best background obtainable, except when the car is painted a very light color. Avoid fences and buildings, as they conflict with the lines of the automobile.

2. In photographing automobiles, it is best to choose a rather dull day in order to avoid strong shadows and "halation" or glare, from the highly polished surfaces of the car. It is also best to use a non-halation plate for this work.

3. The photographer should carefully scrutinize the polished surface of the automobile to ascertain whether there are any reflections of the surrounding buildings, scenery, etc., on the varnish. All of these reflections would show up in the completed photograph. We saw, recently, an undertaker's car, painted black and highly varnished, which illustrated a very pretty picture of a children's playground, with the youngsters and the paraphernalia of the playground showing very clearly in the picture. All this was the result of reflection which could have been avoided by a little care.

4. The camera should be placed in such a position as to take a correct side view of the car. A long focus lens is the best.

5. A very important point to observe is that the automobile should be standing on level ground, so that the vertical lines on the automobile will appear vertical in the photograph. Even on level ground there is a tendency for the lines of an automobile to appear as if leaning forward. In this case weights should be placed in the body of the car in order to straighten the lines on the photographer's ground-glass plate.

6. Be sure that the tires are well cleaned. Nothing is so unpleasant in a good photograph as the appearance of tires spattered with traces of mud.

If the above instructions are carefully followed and the photographer engaged is ordinarily competent, there is no special difficulty in obtaining excellent photographs of any sort of automobile, truck or horse-drawn vehicle. —*Bulletin of Photography.*

MERCURY BICHLORIDE

The solution of mercury bichloride in water, in the preparation of intensifiers, is much facilitated by the presence of sodium chloride or common table salt. Hot water dissolves more bichloride than cold. Boiling water takes up from six to eight times as much as water of normal temperature. The addition of a little muriatic acid helps solution wonderfully. To obtain the most contrasty intensification, ammonia should be used as the blackening agent. All mercury intensification is dependent upon thorough washing from hypo, which probably has a solvent action on the bleached image, and an equally thorough washing is needed to remove the mercury bichloride solution which impregnates the film. As the presence of salt facilitates solution, it might be well to use a salt solution after bleaching, letting the plate remain in it until thoroughly impregnated. This would tend to reduce the time of the final washing. Obviously a hardened and dried negative is more impervious to the first bleaching than a negative that has been fixed without hardening. Still, there is a diversity of opinion regarding this point. Some claim that better intensification results by bleaching the dried and hardened plate without previous soaking, just as, in the redevelopment of prints, many people believe that a better sepia color is obtained by letting the prints dry after washing and before bleaching than by bleaching the prints just as soon as they came from the washing tank.

Incidentally, we might mention that the sepia toning of a mercury bleached negative or of one bleached by means of the usual ferricyanide and bromide bleacher, gives satisfactory intensification.

Many people consider that the best results are obtained when the negative has been fixed in a plain hypo bath instead of in the usual hardening solution and if the need for intensification is foreseen after development and before fixing, it is easy enough to fix the negative in a plain hypo solution instead of using the ordinary acid hardening bath. The hardness of a hardened plate can be destroyed by means of a solution of acetic acid, if desired. Good technique demands the uses of dishes other than the regular developing and fixing dishes, or, at least, the use of glass or enameled dishes that can be thoroughly washed after being used for intensification.

WATCHING

There is a very frequent tendency to underexpose pictures made in direct sunlight. The light is so bright that many people think they must speed up the shutter or stop down the lens, or the film will be overexposed. That is all right when the subject of the picture is an open landscape, a broad expanse of water, or anything in which there are no large masses of shadow, but when the subject is something close at hand, figures, or whatever it may be, and there are shadows that must be properly rendered with some detail and gradation, the exposure must be so timed that it will be long enough to provide for this. This was what the old-time photographers had in mind when they used to give the advice: "Expose for the shadows and let the highlights take care of themselves." In Mr. Hales' portrait group, "Watching," the shadows are too black and solid and are almost entirely devoid of detail. This is due to underexposure, and the harshness of the highlights is due to overdevelopment. When the exposure is timed to allow for detail in the shadows, the sunlit highlights are a good deal overexposed, and there is a tendency towards reversal which has the effect of causing these highlights to develop up rather thin; thus the range of tones in the negative is shortened sufficiently to bring it within the limits of the printing paper. That is the reason for the modern version of the old saying: "Expose for the shadows and develop for the highlights." "Watching" had only 1-10th second at *f*:22, Kodak 3A Special camera, Zeiss Kodak Anastigmat lens, bright sunlight at 4 P. M. in January, film developed with pyro, enlargement on Eastman's Portrait Bromide, D matt.

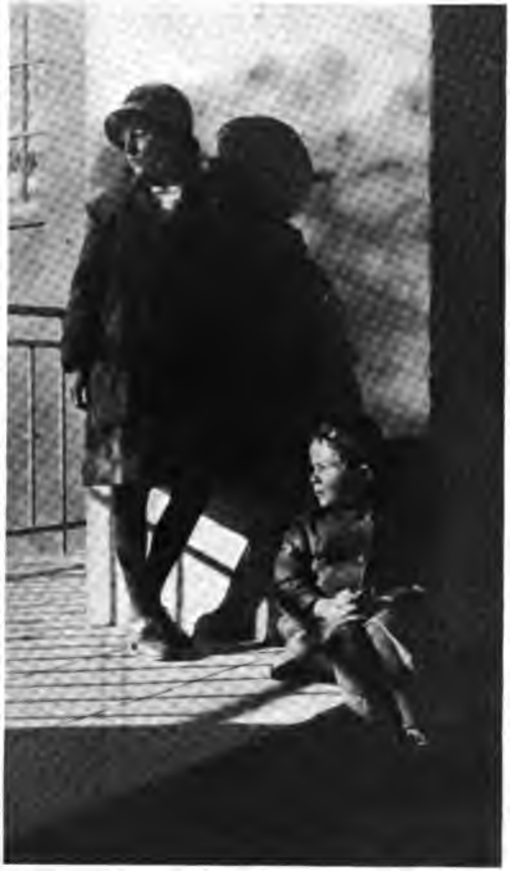
PHOTOGRAVURE PLATE MAKING AND PRINTING

Copper-plate and steel-plate printing has traveled through ages, yet this method of printing remains the same as in the fifteenth century. It is, indeed, the only printing method where machines have been found unavailable for the higher classes of work. In spite of numberless efforts, no mechanical device has yet been found to take the place of the hand in wiping the plate. The idea of the method of printing is simple enough. Lines are incised or cut into a steel or copper plate. The plate is rolled or daubed with ink, which is thus forced into the lines. The surplus ink is wiped off, leaving the surface of the plate clean, while the ink remains in the incised lines. Pressure is applied to the back of the paper laid on the plate, and the paper, being withdrawn, carries the ink with it out of the incised lines. This in intaglio printing.

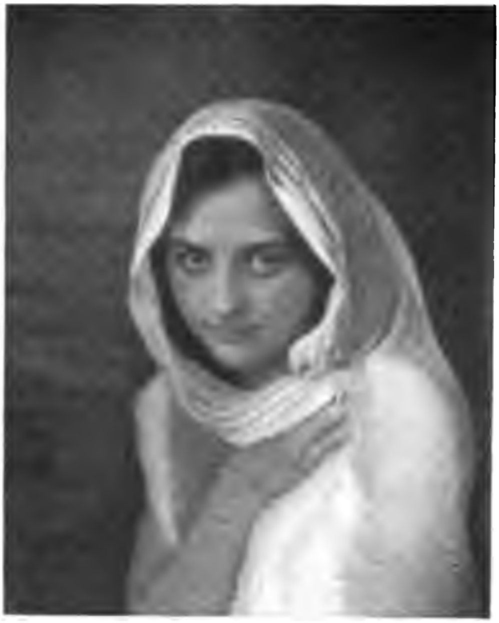
A photogravure plate is an intaglio plate where the intaglio is produced by photography instead of by hand.

Photogravures are produced by two processes: one is called the building or deposit process; in the other the photogravure plates are produced by etching.

We must bear in mind the behavior of a steel-plate in printing. It is composed of deep, fine, incised lines, out of which the ink cannot be wiped. In the photogravure plate it is different: there are no lines, only the tones and half-tones in broad masses. An intaglio print is depressed where these tones and half-tones exist. It is plain some method



WATCHING Geo. P. Hales



MADONNA W. Kitchen

must be adopted to give these spaces a grain or ink-holding capacity, or else when the plate is wiped there would be nothing to prevent the ink being wiped out of these depressions. To obviate this, the printing plate must, as a primary necessity, possess a grain or ink-holding capacity. In the deposit process, bichromated gelatine is exposed to light under a negative, and a picture obtained, not in light or shade, but in relief and depression. To produce the necessary grain, sand or powdered glass or some equivalent gritty substance has been mixed with the gelatine and gives a grain to it. On this gelatine-grained picture, produced by photography, a copper electrotype is deposited or built, such electrotype having all the necessary qualities for intaglio printing. The admirable work of Goupil is done by this method. In the reproduction of works of art it has never been surpassed, though it is fair and proper to add that a large proportion of its merit is due to the amount of exquisite handling and finishing which is put into the plate after the process work has been completed.

The other method of preparing photogravure plates, and by which by far the greater number is made, is by etching. Provision is first made for the necessary grain by dusting the copper plate on which the etching is to be done with powdered asphalt or resin, and heating the plate sufficiently to melt it; these grains of asphalt, of course, protecting the copper during the etching which goes on round them. The copper plate, more or less covered with very fine particles of melted asphalt or resin, is then ready for the reception of the gelatine "resist," properly so-called because its function is to resist, in the proper proportions, the action of the acid with which the plate is to be etched. To prepare the "resist" the services of a bichromated gelatine are again called into requisition. A sheet of bichromated gelatine is exposed to light under a positive (not a negative, or the subsequent operations would make our final picture a negative) and attached to the grained copper plate by atmospheric pressure. The parts of the bichromated gelatine which were not acted on by light remain soluble and are dissolved away with warm water. There remains an insoluble picture of varying degrees of thickness. This resists in varying degrees, according to its thickness, the action of the acid in which the copper plate with its attached "resist" is now placed for the purpose of etching. When the expert has decided that the etching has proceeded to the right point, the action is stopped, the gelatine "resist" removed, and the plate proved. Do not forget that the necessary grain has been produced by the acid not etching where the asphalt has protected the copper, thus forming small fine grains. Any defects may now be removed and handwork added to the plate, but this must be done by a skilful engraver. It is desirable to avoid this as far as possible, in order to preserve the fidelity of the photographic reproduction. It is rarely safe to supplement the work of the artist with that of another hand.

A WORD ABOUT STEEL FACING.

After the plate has been proved, and approved, it is ready for printing, but the copper plate would not wear for twenty impressions if there were no means of protecting its surface. This necessary protection is effected by electric deposition on its surface of an exceedingly fine, thin coat of steel. When steeled, the plate should yield thousands of impressions. If the steel wears at all, the coating is easily dissolved off, and a new coating of steel deposited.

The color of ink in which a photogravure is printed is optional, but there is a very beautiful method of printing photogravure plates, in which the plate is inked locally with a variety of colors, in fact, painted, almost as a painter would paint his canvas, with this advantage, that the design — the groundwork — is prepared for him. When he has laid on his colors, his picture is transferred to paper. The design or groundwork remains, again ready to be painted.

It may readily be conceived that such a process of printing is slow indeed, two or three impressions a day, only, being obtainable from a moderate-sized plate. Perhaps one is hardly justified in calling it photo-mechanical printing. It is an art process, and when artistically done the result fully justifies the labor expended.

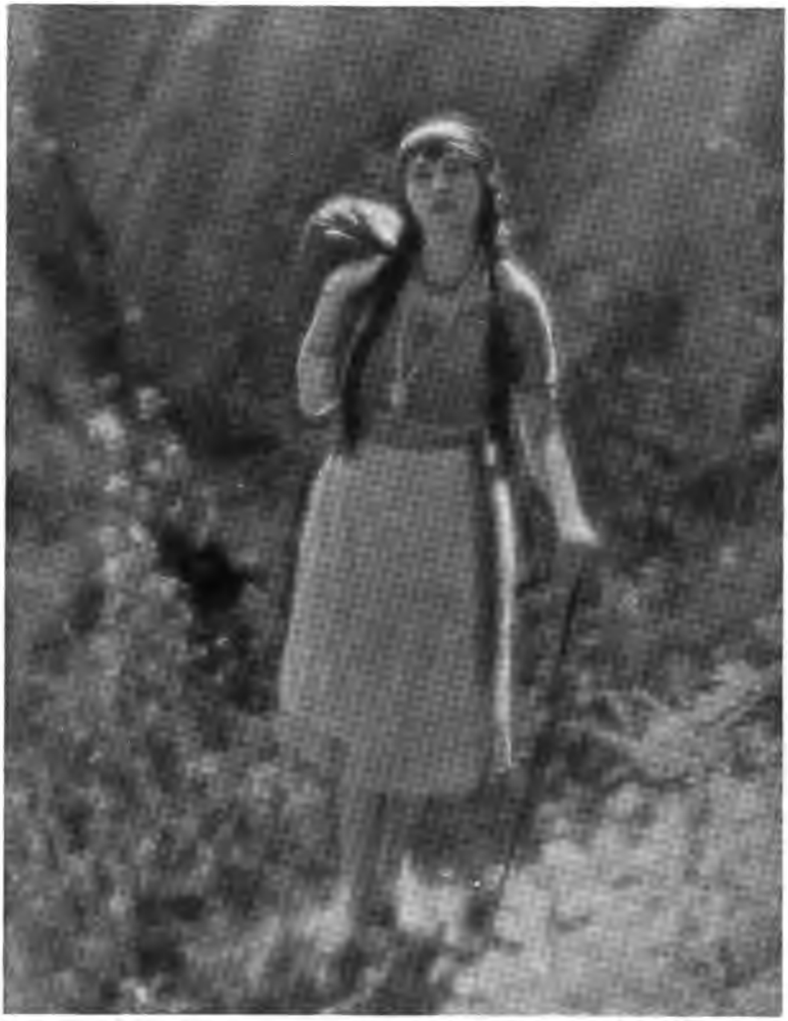
The papers generally used for printing photogravures are plate paper, Japanese vellum, French Japan, parchment, and India. Enamel and coated papers are not suitable for photogravure printing.

The paper is prepared for printing by being moistened and allowed to stand for several hours under a light pressure, so that each sheet of paper may become evenly dampened.

Photogravure plates cannot be printed satisfactorily on dry paper.

MADONNA

You have tackled one of the hardest problems in photography. This is the kind of picture in which every detail must be right for one incongruity, however slight, will mar the whole effect. The old masters, when they painted Madonnas, Saints, and such semi-celestial beings, always idealized the subject a good deal, instead of putting on their canvas a faithful transcript of the model they happened to be using; they also made use of the language of line and the mechanics of suggestion to a great extent.



A NOMAD LYLE A. MORSE

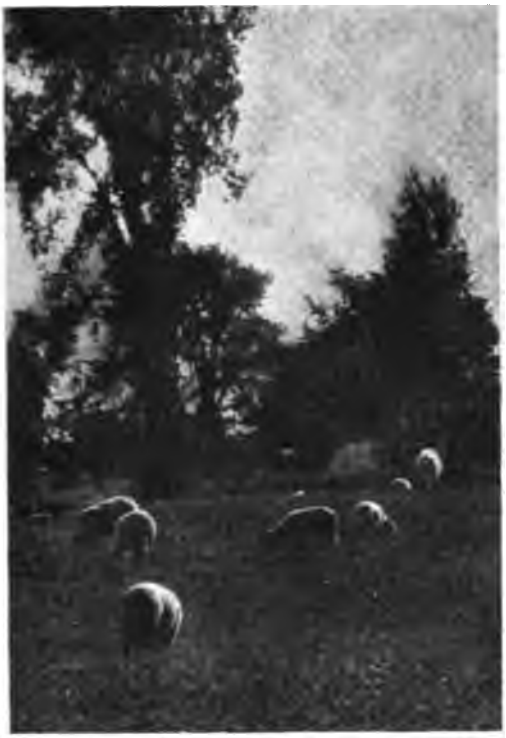
The drapery in your picture is rather hard and stiff and the position of the hand is rather unfortunate; it is nearly always a mistake to photograph bent fingers just as you have done in this instance, with part of the finger hidden, it is so apt to give the impression of amputated fingers. You apparently have not paid much attention to the line arrangement or the general composition of the picture; the head is not well placed and there are none of the graceful, flowing curves that such a subject demands. Made with a Century, 4 x 5, Velostigmat Series 1 lens of 6½ inches' focal length, used at *f*:6.3, exposure 10 seconds, dull light at 11 A. M. in January, Hammer Ortho plate developed with M. Q., print on Iris Rough, grade E.

SOME CURIOUS AND INTERESTING OPTICAL ILLUSIONS

One of the curious optical illusions in photography may be noticed when we photograph a flower like a chrysanthemum which has little pockets in the petals, a number of little holes in which there are deep shadows. The picture always looks as if it were out of focus on these parts owing to the light and shade effect. The same thing occurs when photographing pine cones which have deep cavities in which there are heavy shadows.

A NOMAD

It is very evident that the maker of this and of other similar studies knows how to use his lens to the best advantage. It was used at full aperture and has given a softness and diffusion in the background that is very delightful, while at the same time the figure stands out from the background with almost stereoscopic relief. The back lighting is very cleverly managed and the difficulties that it entails have been skilfully overcome. We think the placing of the figure might be improved a little by trimming a strip from the right hand side or, if the negative will allow of it, by including a little more on the other side. As it is the girl is almost exactly in the center. Made



IN TRAP-ROCK VALLEY C. W. PRATT

with a 4 a 5 Korona camera. Verito lens of 9 inches focal length, used at f:4. K3 filter, Standard Orthonon plate, exposure 2 seconds in bright sunlight at 3 P. M. in August, plate developed with pyro, enlargement on Artura Carbon Black.

RULES FOR SUCCESS

I can't say about the other fellow striving for artistic and financial success, but as for myself I find that TRYING to live up to the following set of sixteen rules is slowly but surely bringing me a measure of the success which I have been working for. I give them here for what they are worth.

1. I put the utmost into my work that "within me lies."

(Have yet to make the first picture that satisfied me.)

2. Advertise to the extent of 15 per cent. of my gross business.

(Daily papers and booklets exclusively.)

3. Undeviating prices commensurate with quality.

(Do not be afraid of getting them too high. You will still have enough fear left to keep them within reason.)

4. Change my showcase regularly once each week.

(Case holds two pictures, one on each side.)

5. Employ receptionist who knows how to sell my product.

(Get the best to be had at any price.)

6. Try to be invariably courteous, cheerful and optimistic.

(All three of equal importance.)

7. Never, never knock competitors.

(Cannot overestimate the importance of this.)

8. Demand and get the utmost cleanliness throughout the studio.

(One of the hardest things of all.)

9. Take a good long vacation each year and attend all conventions possible.

(This will prove money in your pocket, not to mention health.)

10. Always willing to learn from salesmen and demonstrators.

(They all have something good for us and are invariably willing to impart it.)

11. Read the trade journals.

(Can't keep up-to-date without them.)

12. Keep equipment up-to-date.

(Advertising pages of trade journals keep us posted.)

13. Use artistic and exclusive mounts.

(Something the patron cannot get elsewhere.)

14. Send out proofs in a neat and artistic manner.

(Mount proofs in a portfolio, one to the page, wide margins.)

15. Send out finished work in a neat and finished manner.

(A neat white tissue-paper package with artistic grey seal is good.)

16. Use refined stationery.

(Appropriate to the class you are trying to reach.)

There are a thousand and one more rules quite important.

(But the above are the most important as I find.)

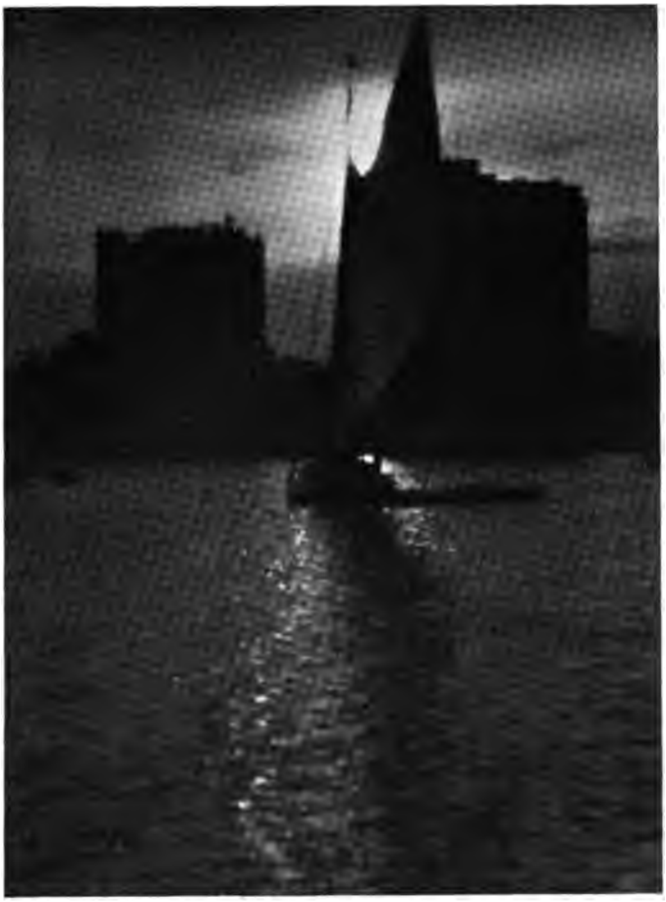
You know all this as well as myself; the thing is: "Do you put it into practice?" — R. MORRIS WILLIAMS.

IN TRAP-ROCK VALLEY

A broad, sketchy picture that depends for its success upon its "pattern" or decorative qualities must have interesting masses or there can be no pattern. Sometimes, when there is decorative interest, detail is not needed, and it may even be dettrimental to the picture as destroying its simplicity. By having broadly sketched masses, the imagination is stimulated and the attractiveness of the picture much enhanced. In Mr. Pratt's bromoil print, "In Trap-Rock Valley," there is practically no detail at all and yet the suggestion is so strong that we can fill in the lack of detail with imagination. We think the evenness of tones has been carried a little too far so that the print is a little monotonous. A little difference in tone between the trunk and the foliage of the trees would have helped. Except for the dark strip in the middle of the print which has been, apparently, too heavily pigmented, the picture is a very successful technical achievement. Negative made on a Wellington Anti-Screen plate with a 3¼ x 4¼ Revolving Back Graflex camera, Cook Busch-Telar lens of 16 inches focal length, used at f:11, good, bright light at 3 P. M. in August, exposure 1-40th second, bromoil print on Barnet Cream Crayon Bromide paper.

EVENING SHADOWS

There is good material for an effective picture — a cloudy sky with sun breaking through, a sailboat and water to reflect the light, but the "skyscraper" houses do not fit into the pictorial scheme. The effectiveness of the sail is lost on account of its coming against the dark mass of the building, and the "pattern" of the picture is not particularly inter-



EVENING SHADOWS JOHN JANSON

esting. We do not think the white border around the print helps it very much; it tends to make the tones appear muddy. If you could get similar material somewhere where the houses would not be so obtrusive and have the luck to find a sky like this one, you would have something very good. Made with a Revolving Back Graflex, 4 x 5. Only the rear part of a Verito lens was used, giving a focal length of 14 inches, stop *f*:4 (really about *f*:16 for the single element), three-times screen, 6 P. M. in October, exposure 1-10 second, Premo film pack developed with pyro-soda, enlarged on Azo, grade E No. 2.

A RAPID FIXING BATH

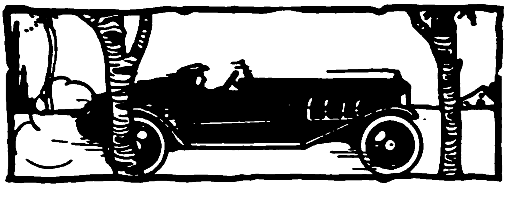
In a recent number of the *Photo-Revue* a French worker gives the following formula for preparing a stock bath allowing of the fixation of negatives and prints being done in the minimum of time:

Hypo, anhydrous	100 gm.
Ammonium chloride	70 gm.
Potass. metabisulphite	10 gm.

Negatives are placed in a mixture of this stock bath 1 part, in water 4 parts. Papers are placed in a mixture, stock bath 1 part, water 9 parts in which they are allowed to remain for from eight to ten minutes. The formula is recommended not only on account of its active and rapid fixing properties, but is said also to yield by-products of fixation which are more readily and rapidly removed by washing.

FLARE SPOTS AND GHOSTS

Flare spots and ghosts are not necessarily due to improper lens design. They may develop in lenses that have been used a good deal and in which the diaphragm leaves have become bright through constant use so that the black coating is worn away. A flare spot is a central defect, while ghosts may occur anywhere in the field. When the lens is stopped down we reduce the size of the flare spot but its brightness remains unchanged. Ghosts and flare are very often met with when the lens is pointed into the light. We have seen such effects from the white crests of breaking waves and they are very apt to show in night photographs. No lens can be made entirely free from ghost possibilities, but, as a rule, a change in the camera position or a change in the distance of the viewpoint from the object will remove the trouble. Lenses that are to be used with the front combination removed should always have an adapter to screw in in place of the lens so there may be no reflection from the bright threads.



THE PHOTOGRAPHIC REVIEW

E. J. Wall, F. C. S., F. R. P. S.

Preservatives for Amidol — One of the main reasons why amidol has not been generally adopted has been the want of an efficient preservative for the same. "Thermit" writes rather enthusiastically on the preservative powers of glycollic acid and recommends the following:

Sodium sulphite, dry	31.25 g	2½ gr.
Amidol	6.3 g	220 gr.
Potassium bromide	3 g	10 gr.
Glacial acetic acid	3 ccm	10 mins.
Water	1000 ccm	16 oz.

This was used for developing papers and gave a fine shade of black; 20 ounces was found to develop 700 sq. ins., equivalent to 32 postcards, without loss of quality in the prints, and the solution was three days old then (*Brit. J. Phot.*, 1921, **68**, 125). This acid is sometimes called oxyacetic or hydroxyacetic, and is properly spelt glycolic. It is obtained from monochloracetic acid by boiling and other ways, and has the formula $CH_2.OH.COOH$.

J. L. Bunel recommends the use of lactic acid, thus:

Amidol	9 g	38.5 gr.
Sodium sulphite, dry	30 g	230 gr.
Water	1000 ccm	16 oz.
Lactic acid	5 ccm	40 mins.

The specific gravity of the lactic acid should be 1.21, which is practically U. S. P. strength. After seven weeks this developer showed no color, although the bottle had been repeatedly opened. Bunel also states that glyceric acid acts in the same way (*Bull. Soc. franc. Phot.*, 1921, **68**, 290). The formula for lactic acid is $CH_3.CH(OH).COOH$, and that for glyceric acid, $CH_2.OH.CHOOH.CHOH$; so that it will be seen that there is some similarity.

J. Desalme has proposed what he calls stannous tartrate (This Journal, 1922, 189).

J. G. F. Druce has found that amidol made by reduction of 2:4 dinitro-phenol with tin and hydrochloric acid contains small quantities of tin chloride and thus with sodium sulphite contains its own stabilizer, and he has applied for a patent for the stannous compounds, which have for the amidol stannochloride the formula $HO.C_6H_4(NH_2.)_2 H_2Sn Cl_4$ the stannichloride contains $H_2Sn Cl_6$. A developer made up from amidol containing the amidol stannochloride, only a trace, has shown no darkening after fine months (*Brit. J. Phot.*, 1922, **69**, 81).

Hydrotype. — B. Lincke & R. Kaufhold have patented a modification of the hydrotype process in which the plates are developed with a non-tanning developer, the plates being exposed through the back, after treatment with a mixture of potassium bromide, bichromate, cupric sulphate, and hydrochloric acid, which tans the gelatine *in situ* with the metallic silver. Development is then effected with hot water, and the relief dyed up and used for transfer of the image to gelatine or other surfaces. (*D. R. Pat.* 336,041, 1920; *Sci. Tech. Ind. Phot.*, 1922, **2**, 15). Exactly where the novelty lies in this process is not clear, as it is nothing more than Howard Farmer's patent (*Eng. Pat.* 17,773, 1889), which has however been patented since by Riebensahm & Posseldt, Mezaros, Ives, John and others; the only novelty, if it can be called such, is the addition of the cupric salt. Practically the hardening-bleaching mixture here patented is nothing more than the familiar bromoil bleach.

Borax and Other Restrainers. — E. R. Bullock, of the Kodak Research Laboratory, has examined the action of borax, and points out that Lüppo Cramer (*Phot. Korr.*, 1915, **52**, 171) ascribed the restraining action of borax to the low solubility of the silver salts, corresponding to the salts in question. But Bullock finds that the effect is due to the decreased alkalinity of the developer, due to the chemical reaction between the borax and the alkali used. Sodium salicylate acts in the same way as borax, while oxalates and succinates fall midway between the carbonates and borax (*Brit. J. Phot.*, 1921, **68**, 639). Borotartrate was suggested as a restrainer more than thirty years ago by B. Edwards, but like so many other suggestions has never come into general practice.

Desensitizing. — C. Bonacini has exposed panchromatic plates, desensitized with safranin, in the spectrograph and comes to the conclusion that the desensitizing action is not uniform throughout the spectrum, but selective, being stronger in the regions for which the plates are color-sensitized than in the region of characteristic sensitivity. The action is the same in the ultra-violet as in the blue. Placing the negatives, stained with the safranin, before the slit of the spectrograph showed that any screening action was limited to the green, the place of absorption of the dye. The fact that the red-sensitiveness is sometimes less strongly reduced than for the other rays, suggests the obvious precaution that a blue-green light is better than an orange (*Il Prog. Foto.*, 1921, 210; *Sci. Tech. Ind. Phot.*, 1921, **1**, 91.

Dilute Developers. — Lüppo-Cramer has observed that a very dilute amidol developer, and others of the same family, possess a much greater developing energy than stronger solutions. The phenomenon is due to the much greater hydrolysis of the weaker solutions, by which the hydrochloric acid of the diamidophenol is absorbed by the gelatine. That the gelatine is not essential, however, to the reaction was proved by the use of collodion emulsions when the same effect was obtained, not only with amidol, but also with tri-amido benzol, tri-amidotolol, tri-amidophenol, tri-amidoresorcin and metol (*Phot. Korr.*, 1921, **58**, *Chim et Ind.*, 1922, **7**, 110).

An Economical Printing Process. — C. E. Bergling recommends as a substitute for platinotype, what is nothing more than the old kallitype process. The following stock solutions are required:

A.	Ferric ammonium oxalate	20% solution
B.	Silver nitrate	2% solution
C.	Ammonium bichromate	1% solution
D.	Oxalic acid	1% solution
E.	Hypo	10% solution

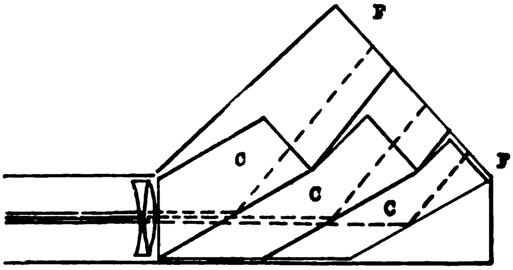
The paper should be sensitized by the light of a candle or other artificial light, with A by means of a flat brush, till the paper will absorb no more solution. If should then be dried, taking care to protect it from any light. The exposure should be made, using an actinometer, as the image is almost invisible. The print is developed by immersion, face downwards in a dish filled with B, and when sufficiently intense, it should be immersed in D for one or two minutes to eliminate every trace of iron salt, and then rinsed and fixed in E for 5 minutes and washed and dried (*Phot. Rund.*, 1921, **57**, 153; *Chim. et Ind.*, 1922, **7**, 111). No mention is made of the use of the bichromate, and one must only suppose that this might be added to the acid to give cleaner whites or to the sensitizer to obtain more contrast.

A NEW DYE PRINTING PROCESS. — Eder describes a process based on the light-sensitiveness of some of the diazo dyes, which has been patented by the Badische Anilin & Sodafabrik, of Ludwigshafen. The novel feature, claimed for the process, is the use of the paradiamino bases with acid dyes. The action is one of photo oxidation, assisted by the addition of oxygen carriers, such as nitrates, chlorates, etc. The time of exposure is long, about 4 hours, and various colors can be obtained. The process for the preparation of the light-sensitive compound is divided into two steps: (1) Benzidin hydrochloride or other diamine compound is precipitated with an acid dye, such as eosin, cyananthrol, Neptune green or quinolin yellow. (2) This precipitate, which must contain the free benzidin base, $NH_2.C_6H_4.C_6H_4.NH_2$, is decomposed with manganese, calcium, nickel or magnesium nitrate, picric acid or similar oxidizing agent, and coated on glass or other support with a colloid as the vehicle, such as gelatine or albumen. Fixing is effected with a weak alkaline solution, such as borax or sodium phosphate. Modification of the colors may be obtained by treating the prints with very weak sodium hypochlorite or 1 per cent bichromate. Apparently it is not possible to obtain pure whites. A bright purplish red print can be obtained with:

Blancfixe paste (30%)	100 parts
Sodium carbonate, anhydrous	10 parts
Fish glue (20% solution)	15 parts
Eosin A	20 parts
Benzidin hydrochloride (2% solution)	200 parts

By treatment of the prints with weak hypochlorite, a brighter red is obtained. Dark violet prints are obtained by using the above formula, but substituting 20 parts of cynanthrol R. B. X for the eosin, and 850 parts of the benzidin compound. Bright green prints may be obtained by substituting Neptune green S. G. X. in place of the eosin. Weak hypochlorite gives a much more pleasing dark green. Brown prints are obtainable by using 20 parts of quinolin yellow L extra, and 600 of benzidin. The above preparations are mixed with 40 parts manganese nitrate and 40 parts water, and are coated on paper and fixed in borax or phosphate. Eder states the process is well worth attention, although pure whites are not obtainable, as the variety of colors is very great and the prints have great vigor and brilliancy (*Brit. J. Phot.*, 1921, **68**, 658; *Phot. Korr.*, 1921, **58**, 289; *D. R. Pat.* 337,173, 1919). Blancfixe paste is barium sulphate.

CINEMATOGRAPHY IN COLORS.—P. Ulysee recently gave a demonstration of his process of motion pictures in colors before the French Society, which apparently does not present many very novel points. He uses three lenses, or rather longitudinal sections of lenses, mounted close together in one mount, and the areas of the three pictures are so reduced that they occupy the same space as one of the usual black and white pictures, but arranged in trefoil pattern in an equilateral triangle of 12 mm base. The ordinary projector is employed, this being provided with a triple objective instead of the usual form (*Bull. Soc. franc. Phot.*, 1920, **62**, 259). This method is probably that outlined in *Fr. Pat.* 398,220, 1908; *Eng. Pat.* 672, 1914; *Brit. J. Phot.*, 1915, **62**, 136, or *Fr. Pat.* 433,162, 1911, or 499,962, and *Eng. Pats.* 18,431, 1912; 30,108, 1912. The use of the sawn-off lenses was first proposed by O. Pfenninger (*Eng. Pat.* 2,590, 1906; *Brit. J. Phot.*, 1900, **54**, 582) and Gaumont (*Eng. Pat.* 3,220, 1912; *U. S. Pat.*, 1,213,184, 1917; *Fr. Pat.* 437,173, 1911). The trouble with this, or any form of cinematography in colors that requires any special form or alteration of the projector as used in the average movie house, is that the managers are very loath to go to the expense and trouble of the extra fitting required. Whether the particular method would obviate the continuous trouble of want to register caused by the expansion of the film base is an open question, I do not think it would. And one has always in those cases when more than one lens is used the bugbear of parallax, or as it is sometimes called the stereoscopic difference of the lenses, which means that only one plane focused on will register in the projected pictures.



Ulysee has taken out another French patent in which he proposes to overcome the parallax, by using two sets of three lenses, one set focused for distant objects with fixed focus, and the other set, with variable focusing, for near objects (*Fr. Pat.* 523,553, 1920; *Sci. Tech. Ind. Phot.*, 1922, **2**, 11). In another patent Ulysee would avoid parallax fringes. In the principal patent the fringes, due either to parallax or movement of the object, were to be obviated by splitting up the exposures into a certain number of partial ones, each beam being directed on to a different portion of the film, and the partial exposures being repeated, and then the film shifted. In the additional patent the use of such negatives is claimed for screen-plate work and inversely (*Addition*, 23,780, 1915, to *Fr. Pat.* 502,078, 1914; *Sci. Tech. Ind. Phot.*, 1922, **2**, 14).

F. E. Ives has discovered that when making positives for the two-color process of cinematography, better results are obtainable by using a mixture of two dyes for staining up the positive pictures, as a yellow and a red dye instead of a red, and claims to thus secure better rendering of the yellows. He calls his results dichroic, and the pictures show yellow in the thin places and the red in the deep shadows (*U. S. Pat.* 1,376,940, 1921). The use of two or more dyes, that is a red and a yellow, and a blue and yellow, to secure better rendering of the colors of the lighter tints has been common practice with those firms experimenting with motion pictures in colors for more than four years. How a valid patent can thus be obtained is not quite clear.

H. Isensee would do away with all filters for ordinary color or cinematographic work by utilizing a particular shaped cell, filled with cinnamic ether, which has a very high refractive index, as shown in the accompanying figure, in which C, C, C, is the cell and F, F, the plane of the film or plates; the path of the red, green and blue rays being shown by the broken lines. The principle involved here is that of the total reflection of the different colored rays at the limiting surfaces of the glass plates, separating the three compartments of the cell (*D. R. Pat.* 334, 776, 1920; *Sci. Tech. Ind. Phot.*, 1922, **2**, 15). The only case in which, so far as can be recalled, the critical reflection of the different colored rays is utilized is *Eng. Pat.* 7,756, 1912; *Brit. J. Phot.*, 1913, **60**, 426, in which glass prisms with circular faces were utilized.

Suspension of the "Photographische Korrespondenz." — As a result of the abnormal economic conditions in Austria the above journal has had to announce its suspension. This will be a matter of great regret to all students of photography, for since its birth in 1864, the *Korrespondenz* has been one of the most advanced journals in the German language and one relied to a great extent on it for records of Continental advances.

A New (?) Positive Printing Process. — O. Mente puts forward the following as a new printing process. The best Cologne glue is broken up into small pieces, by wrapping it in a clean cloth and hammering on a hard base. The pieces should be soaked in cold water for 24 hours, and excess of water poured off. Then the glue, which will have soaked up a lot of water, is melted by heat in a water bath. If the solution is too thick, it is proof that enough water has not been absorbed, and for the future more soaking must be allowed. The exact strength of the glue solution is not stated, merely that it should be thin. The sensitizer should be a saturated solution of ammonium bichromate and should be mixed with the glue in the ratio of 1:3 or with very thin glue 1:4. This is to be mixed with the pigments, such as sienna, Paris blue, English red, charcoal and lampblack, and experience will tell the operator how much to use. Paper is coated with this, dried and then the paper made translucent with paraffin or vaseline, by rubbing the same in on the back. Printing is effected through the paper, and experiments must be made to determine how long to expose, using print-out paper in an actinometer. Development is effected by immersing the paper in lukewarm water, with or without spraying the surface. Finally the print should be washed in cold water or immersed in sodium bisulphite solution to remove the last traces of the undecomposed chromate. (*Das Atelier*, 1922, **29**, 5, 10). Cologne glue is the best and palest carpenter's glue. Of all absurdities, calling this new is one of the greatest; there is nothing at all novel about the process except possibly the very lax and indefinite directions to set about it. Practically it is a reversion to the oldest and very earliest methods of carbon printing, even to the oiling of the paper, such as was used in 1858.

The Activity of Organic Developers. — W. F. A. Ermen has just published a preliminary paper on the above subject, which while it does not lend itself well to abstraction, still contains a few useful notes. He found that it was impossible to obtain even development by rocking plates in a dish. Finally Kodak portrait film was adopted and plunged into the developer in a dish and rocked violently till the image appeared and was then transferred to a beaker and the developer poured out and back again once a minute. The addition of a carbonate to the developer causes acceleration of its action, but with the amidophenols an increase of above N-5, that is about 1 per cent of anhydrous carbonate, gives neither quicker development nor increase of density. With the hydrochinons, on the other hand, increase of carbonate beyond this amount, did show an increase. Metol and hydrochinon would seem to fall in the class of amidophenols. (*Phot. J.*, 1922, **62**, 123).

Accelerated Hypo-Alum Toning. — "Thermit" gives the following method of accelerating the action of the ordinary hypo-alum bath:

Hypo	200 g	1 lb.
Potash alum	50 g	¼ lb.
Boiling water	100 ccm	80 oz.

This should be ripened by the addition of about 18 sq. ins. of old development paper, or rather less if bromide is used; obviously this must be undeveloped for the first lot. Each day before use a few ounces are poured away, and the bulk made up with the addition of fresh stock. For fixing the prints a plain hypo bath simplifies matters, and they should then be immersed in about 8 per cent solution of sulphuric acid. After a good turn over in the acid, the prints are immersed in the hot toning bath, and with a very hot bath they may tone in 30 seconds. If chrome alum or acid fixing baths are used, it is as well to give them a minute's soak in a 30 to 40 per cent solution of plain hypo, then immerse in the acid and thence transfer to the toner. Hydrochloric acid may be used instead of the sulphuric, but the latter is preferable, as it does not introduce strange acids into the toner. There is less risk of stains by this treatment and the tones are very regular (*Brit. J. Phot.*, 1922, **69**, 80, 126). As pointed out in the *B. J.*, there is probably the action of nascent sulphur to be taken into account, which is produced direct in the gelatine by the action of the acid on the hypo in the vehicle. Lumière & Seyewetz, and also H. Soar (*Brit. J. Almanac*, 1914, 660,662) recommended somewhat similar methods, in which collodial sulphur was the active toning agent, but the tones were not apparent until after washing for some time.

The Exposure and Development of Ortho Plates. — Kurt Jacobson draws attention to the influence of exposure and development on the color rendering of orthochromatic plates, and says that without a yellow filter there is but little improvement, except possibly in the bright greens, and with underexposure even this is not seen. With overexposure all sorts of effects may be obtained, and practically it does not give better results. When a filter is used, then the length of exposure has some considerable influence, especially when development is prolonged so that the deeper-penetrating green and yellow rays are properly developed, the action of the blue rays being mainly on the surface of the film. A somewhat slow developer with bromide gives the best results. (*Phot. Ind.*, 1922, 141). That development has some influence on the rendering of the colors was first pointed out by H. W. Vogel (*Phot. Mitt.*, 1891, **27**, 63) and he stated that the parts acted upon by the blue rays appeared first and gained density more quickly, and that it was only with prolonged development that the action of the yellow rays came to full effect.

Development of Overexposed Plates and at High Temperatures. — E. di Spitimbergo recommends the following method of developing plates that have been overexposed, and when the temperature of the solutions is comparatively high, that is higher than 15° C. (60° F.) Three solutions should be made up:

A.

Metol	2 g	15.4 gr.
Hydrochinon	8 g	61.5 gr.
Sodium sulphite, dry	50 gr.	384 gr.
Water	1000 ccm	16 oz.

B

Sodium carbonate, dry	100 g	768 gr.
Water	1000 ccm	16 oz.

C

Potassium bromide	100 g	768 gr.
Boric acid	30 g	230 gr.
Water	1000 ccm	16 oz.

For correct exposure mix 100 parts of A, and 1 part of C. The plate should be allowed to remain in this for 2 minutes and without washing immerse in B, which should be diluted according to the temperature as follows:

Temperature	Sol. B	Water
10–14	100	
15–16	70	30
17–18	45	55
19–20	25	05
21–22	15	85
23–24	10	90
25–26	5	85
27–28	3	97
29–30	1	99

If the exposure is correct, the image will appear in A; if it appears before 30 seconds, the plate is overexposed and development should be finished in A with the addition of a few drops of C (*Il Prog. Foto.*, 1915, 305; *Bull Soc. franc. Phot.*, 1922, **64**, 23).

PANCHROMATIZING PLATES. — R. Namias suggested the following bath:

Pinachrom, 1:1000	1 ccm	3½ minims
Pinaverdol, 1:1000	1 ccm	3½ minims
Pinacyanol, 1.5:1000	1 ccm	3½ minims
Water	1000 ccm	16 oz.

No alcohol, no whirler and no ventilator are required. Immersion should be for 2 minutes and the plates should be dried in a box with calcium chloride. The addition of 1 to 2 g of boric acid to the bath prevents fog (*Il Prog. Foto.*, 1916, 33; *Bull. Soc. franc. Photo.*, 1922, **64**, 23). The ratio of the dyes may be right, but the addition of boric acid very rapidly bleaches the dyes, and this happens even without the same, so that an addition of a drop or two of ammonia, or preferably 0.2 per cent of borax is advisable.

BROWN TONES ON BROMIDE PRINTS. — R. Namias recommends bleaching the prints in:

Cupric sulphate	80 g	614 gr.
Neutral soudium citrate	10.5 g	81 gr.
Water	1000 ccm	16 oz.
Potassium ferricyanide	9.5 g	73 gr.

Wash well after toning and then redevelop with metol-hydrochinon containing 0.2 per cent bromide. In this bath the silver ferrocyanide, if the redevelopment is carried out in daylight, is reduced while the copper ferrocyanide is unaffected. This gives some intensification, so that the prints should not be too dense in the first case. Another variation is to immerse the toned print in 1 per cent solution of caustic soda or potash. In this it is stated that copper oxide is formed, and then the print may be developed in white light and a very agreeable brown tone results. By this last treatment the print is not intensified. (*Il Prog. Foto.*, 1915, 347: *Bull. Soc. franc. Phot.*, 1922, **64**, 26). As copper ferrocyanide, which is precipitated on the image, is instantly soluble in a caustic alkali, one wonders how the oxide can be formed.

DEVELOPERS FOR AUTOCHROME PLATES. — At a recent meeting of the color section of the Société Française, some interesting trials were made with various developers. It was first determined that the correct exposure with an incandescent lamp of 20,000 c. p. was 50 seconds and then different members of the group tried their pet developers, the plates having been exposed for 20, 50 and 120 seconds. C. Adrien used pyrogallol and ammonia and the plate normally exposed was the best. Comte de Dalmas used pyro and ammonia without bromide and without sulphide, and the plate exposed for 20 seconds was not only the best of his group but of all the plates. M. Maupy used acid amidol after desensitizing with aurantia, and the plate exposed 120 seconds was the best. Schitz used acid amidol with bromide and the 20 seconds plate was too dense, the 120 one too thin. Vannier also used amidol and sulphite, no bromide and the 50 and 120 seconds plates were both too thin. Finally another trial was made with metoquinon, Lumière's formula, and when compared with a plate developed with pyro, it was found that with metoquinon the same results were obtained with one-third the exposure (*Bull. Soc. franc. Phot.*, 1922, **64**, 11).

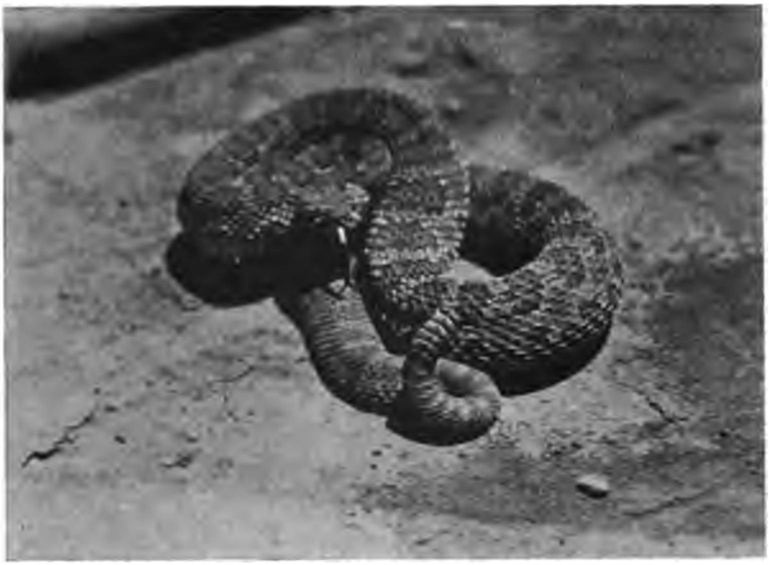
INTENSIFICATION OF BROMIDE AND DEVELOPING PAPERS — R. Namias recommends bleaching the prints in mercury solution as usual and then blackening with:

Caustic soda	20 g	154 gr.
Formaldehyde	90 ccm	384 minims
Water	1000 ccm	16 oz.

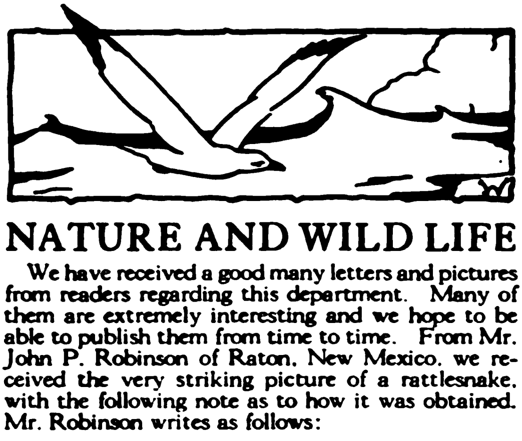
This is said to deepen the shadows and keep the white pure. (*Il. Prog. Foto.*; *Das Atel.*, 1922, **29**, 8). The use of this mixture after mercury was suggested by Blake-Smith (*Amat. Phot.*, 1901, 362) and possesses no particular virtues.

EMULSION RIPENING. — H. Knoche considers that if one could retard the production of silver bromide in an emulsion, ripening might take place at the same time. Thus it might be possible to obtain high speed with fineness of grain. If damp silver oxide were used alcohol might be formed in the emulsion, which would remain without damage and with reduction of cost and time of washing. The addition of ammoniacal salts of silver might permit the formation of amines in the emulsion, thus avoiding the special addition of ammonia. Ethyl bromide was tried but without success, and then mono-bromacetic acid, which is soluble in water and boils at 203° C (600° F), but the emulsions were very slow and useless (*Phot. Rund.*, *1921*, **57**, *49*; *Chem. Ind.*, *1922*, **7**, *291 D*). Exactly how one can ripen something that is nonexistent is not quite clear, nor how silver oxide can form alcohol. If the ammonia salts of silver are used, there is immediate evolution of free ammonia when these are added to a soluble bromide.

NON-INFLAMMABLE CELLULOID. — G. Schaaf, of Berlin, has introduced a method of making celluloid comparatively non-inflammable. Apparently the finished positives are treated and not the raw stock. The film is said to be 30 per cent. harder (*Photo. Rund*, 1922, **59**, 94). Saponification of the surface of celluloid, or in other words, its denitrification is an old trick, and was first suggested by Weston in 1882, and there have been a host of patents since; but not one method has found general adoption, though it is reported that Pathé Frères treat their positives with triphenyl phosphate, which renders the celluloid less combustible.



RATTLESNAKE JOHN P. ROBINSON



NATURE AND WILD LIFE

We have received a good many letters and pictures from readers regarding this department. Many of them are extremely interesting and we hope to be able to publish them from time to time. From Mr. John P. Robinson of Raton, New Mexico, we received the very striking picture of a rattlesnake, with the following note as to how it was obtained. Mr. Robinson writes as follows:

FIGHTING MAD

In the great south west, 7,000 feet above the sea's surface, lie the awe-inspiring ruins of the homes of the cliff dwellers, and the region is rich in ancient Spanish lore. But the warring red men and the fierce Vaqueros have been fenced in on reservations and reduced to a condition of resentful subjugation. Truly, the desert has but a single survivor of the olden age and he very conscientiously maintains the old chivalric code, as he raises his flat head above his shining, black diamonded, yellow coils and fills the air with a dry and wicked rustling as he warns the world that all he desires is to be left alone. The picture of the rattler was taken in his native habitat, as he lay sunning his deadly coils along the roadside on the Santa Fe trail in northern New Mexico and shows the snake as he is just ready to strike. The camera, a 4 x 5 R B Auto Graflex with a Tessar f:4.5 lens of 9½ inches focus was held just outside of the reptile's striking limit and the exposure was 1/30 sec. at f/8, noon, May, bright sunlight, on Eastman Graflex film, pyro soda tray development with print on Axo Hard X. The subject posed very unwillingly and as he was indiscreet enough several times to launch his five feet of length as far as possible in our direction with every evident intent of sinking his fangs into our carcass, we felt forced to retaliate and ended his six-year career with a bullet from our 45 Colt which proved a very convenient addition that day to our amateur equipment.

Apart from the slight lack of sharpness in the further plane, the picture is a good one and it shows very clearly the markings on the skin, the flattened head and the horny rings on the end of the tail from which its age can be reckoned.

Regarding the two pictures — "Hawk chasing Rabbit" and "Partridge in Flight," Mr. Pendery writes: These pictures are what the late Teddy Roosevelt called "nature fakes," but they seem to me to be fairly good as such. While the pictures have all the ear marks of "speed," the particular subjects have been in just those identical positions for many years, to my personal knowledge. The hawk is always just on the point of snatching up the rabbit, but he never does so, and the fast flying partridge never gets anywhere. These specimens are all nicely mounted and enclosed in glass cases in the Museum of Natural History in Lincoln Park, Chicago, and the pictures were taken through the glass cases.

Dr. Cowen gives the following details regarding his fine picture of doe and fawns which he calls "Surprised": — The doe and twin fawns were in a small park of our own, in the Alleghenies. The doe, a perfect pet, would eat from our hands and tag around after us like a dog, but she kept her babies very carefully hidden away in the bushes and undergrowth one in each end of the lot, and brought them out only twice a day at feeding time, early morning and late in the afternoon. I stalked them for two weeks without results. Before I could get into shooting position the fawns would be gone like a flash and the doe would come hurrying up to see whether I had something for her to eat. Finally there came a day when, with the wind in my favor, I managed to work my way slowly into close range and I think that "Mama" was as much surprised as the babies at the noise of the focal plane shutter. "Little Brother" was already in flight but "Little Sister" with that innate inquisitiveness of the deer which so often leads to its undoing, stopped for just one more look and from the blurred outline of the lifted fore-foot, you will understand that she did not remain long in that vicinity after the one look.

ROUND WORLD EXCHANGE CLUB

Notice of change of address: Mr. Warwick A. Sullivan, (No. 1142) has moved from Prescott, Arizona, and his new address is — P. O. Box 1074, Santa Fe, N. M. This change will enable him to add pictures made in and around Santa Fe to his exchange list.

1211 J. R. Barr, Box 743, Summerside, P. E. Island, Canada, 3¼ x 4¼, Landscape and Marine pictures.

1212 William Williams, Penn. Y. M. C. A., Penn. Station, New York City. All kinds of subjects, assorted sizes and in various printing processes.

1213 N. H. Delmonico, Shawatlans Power House, Prince Rupert, B. C., Canada. 3¼ x 5½ and 5 x 7, Azo and Cyko prints, miscellaneous and general subjects.

1214 P. E. Hixson, Tyler, Texas, 2¼ x 3¼ and 3¼ x 5½, D. O. papers, Landscape and speed pictures.

1215 Fred H. Eklen, 2170 Warner Avenue, Chicago, Ill. Any size, contact prints, portraiture, landscape, etc.

1216 David M. Knauss, 524 Hamilton St., Allentown, Pa. Any size from 4 x 5 up, landscapes, genre, still life, bathing scenes, speed pictures, architecture and general good pictures. Only the best work sent out and the best wanted in exchange.

1217 Lawrence S. Clark, 2110 Bryant Avenue So. Minneapolis, Minn. 2¼ x 4¼, post-card and vest pocket, landscape and figure studies.

1218 Harry B. Cuthbertson, Box 175, Mass. Inst. of Technology, Cambridge 39, Mass. 2¼ x 3¼, 4 x 5, contact prints or enlargements, historical and travel pictures. Wanted — anything of general interest, Indian and foreign pictures.

1219 Alvin L. Fischer, North Mill St., R.3., Jasper, Doubbois County, Ind., 2¼ x 4¼ and 4 x 5, Velox and Aristo Gold prints, nature studies and others of general subjects.

1220 Walter E. Woestman, 116 E. McLean St., Alhambra, Los Angeles, Calif. 3¼ x 5½ and 5 x 7, D. O. P., landscapes, "movie" sets, etc.

1221 A. J. Schneider, 231 North 18th St., Portland, Ore. 2½ x 4½, 3¼ x 5½, mountain views in Oregon and in all parts of Colorado.

1222 Juan Cloquell, Borges and Cloquell Photo Store, Plaza Munoz Rivera, Arecibo, Porto Rico. Wishes to exchange views of Porto Rico and landscapes for pretty landscape and figure studies.

PARTRIDGE IN FLIGHT

HARVEY C. PENDERY

CORRESPONDENCE

Glendale, California,
June 7th, 1922.

Editor of AMERICAN PHOTOGRAPHY,

Sir:

I noted Mr. Frederick Evans' letter in a recent "A. P." His remarks regarding the real value of photography as a medium of expression should be read, indeed memorized by any budding "pictorialist." I groped all through the stages of "fuzziness" and intentional over- and underexposure to get "effects," until I awakened to a realization of what photography really means, and that is "an affirmation of the majesty of the moment," to quote from Paul Rosen-

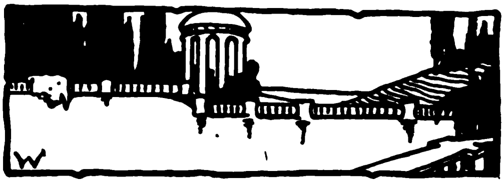
HAWK CHASING RABBIT HARVEY C. PENDERY

feld's article on "Stieglitz" in the "Dial," April, 1921, an essay pregnant with understanding of the inherent qualities, the essential values of photography. Again he speaks of what the photographer alone can do, "Fix the visual moments, register what lies between himself and the object before his lens, at a given moment of time." One of our well known pictorialists has made the statement, the quite visionless remark, that photography must have "the vitalizing influence of the hand." If I do not quote correctly from memory, my profound apologies at once, but the foregoing will serve as an argument. Devitalizing, texture destroying, prostituting, I say *in re* the hand I have only pity for those visionless photographers, those miserable technicians, those poor craftsmen, who cannot grasp the subtleties of their medium, but wipe out the very reason for photography's existence by manual interference, making gum prints, bromoils, etc., retouching and working up their unsatisfactory negatives, so destroying values and textures, mixing up painting and photography and producing—nothing! The real test of not only technical proficiency, but intelligent conception, is not in the use of some indifferent negative as a basis to work from, but in the ability to see one's finished print on the ground glass in all its desired qualities and values, before exposure. And how much keener perception, finer intellect, is required to produce, so to speak, the final result at the time of exposure, rather than that mind which hazily, uncertainly, gropingly accomplishes. I feel quite often, by chance alone, an "exhibition" picture as an afterthought to an unconsidered, unspontaneous attempt.

"Record photography," "snap shots," "every one a pictorialist?" No, indeed! For only the few can "see."

Mr. Evans' pictures are his own best argument for his method of working. They were among the finest at the recent Los Angeles show.

Cordially yours,
EDWARD WESTON



PRACTICAL HINTS

THE CARD ALBUM — The question of filing negatives and keeping an index to them so that they are always available for use in a few moments is constantly coming to the fore and many may be interested in the following, along that line.

The actual storing of the negatives is comparatively easy; the films may well be stored in a film album such as is offered by the Eastman Kodak Company and others, while the glass plates can be kept in transparent envelopes in the boxes in which they are originally sold, the outside of the boxes being marked to indicate the numbers of the negatives contained therein.

In numbering the negatives it is well to assign a block of numbers to each size as, for example;

Vest Pocket	1001 to 1999
2¼ x 3¼	2001 to 2999
2½ x 4¼	3001 to 3999
3¼ x 5½	4001 to 4999
4 x 5	5001 to 5999

This method of numbering causes all the negatives of the same size, up to 999 in number, to fall together. If the number of any size has exceeded this amount a series beginning 11001 can be started. It will be seen that the fourth digit from the right in all cases indicates the size of the negative. The numbers are placed on the edge of the negative in India ink and the negative album and transparent envelopes are correspondingly numbered to insure the negative being returned to the correct position.

However, the above plan, or any other for that matter, of filling and caring for negatives comes to

SURPRISED M. E. Cowen, M. D.

naught unless a method of indexing is devised which will connect the negative and the number with accuracy and enable the correct negative to be selected without the necessity of handling and inspecting any others.

In arranging an index we must bear in mind that it is hardly possible to assign to each individual picture a title concrete and comprehensive enough to permit the selection of a negative by that means. Let us assume that several pictures have been taken of a single subject. It has been tried under varying conditions of light, from different points of view or at different times of year; all of these pictures have been good enough to cause us to retain the negatives, yet only one of them has produced just the effect sought. It is almost impossible to so title these pictures that one negative may be distinguished from the others by merely referring to an index of titles. It would be necessary to get all the negatives of that subject out and examine them to determine the one wanted at the moment. Further, it is to be remembered that it is easier for most of us to recognize a positive than a negative.

Working on the above basis let us prepare a classification of subjects under which our pictures might conveniently fall, for instance; it might look something like this:

1. Portraits.
    A. Infant.
    B. Adult.
    C. Group.
2. Street Scenes.
    A. Winter.
    B. Summer.
3. Landscapes.
4. Interiors, etc.

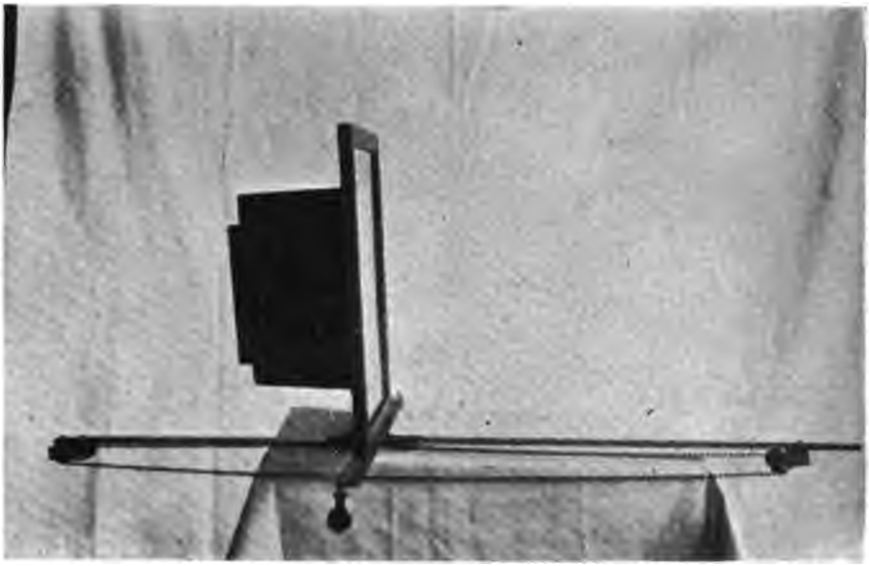
The various classes and subdivisions would naturally depend upon the extent and scope of our work and each individual can best work out his own classification.

Having done this let us take double weight post-card size sensitized paper and trim ½" off the end leaving a card measuring 3¼ x 5 and make a record print of each of our negatives using in each case a suitable mask. The mask does not necessarily have to be of arbitrary size such as used by the commercial finisher but a series should be prepared in order to allow some latitude in the selection of the picture. It is convenient to place a line on the mask indicating just the position the paper will assume when the opening is centered. The largest mask to be used would be about 3 x 4½ which will not, of course, give us the whole picture on a 4 x 5 plate but it will give us the essentials, which is sufficient for our *record print*.

Having made our prints, record on the back in the upper left corner, the class number; in the upper right, the negative number; and below in any order desired, the Title, Date, Location, exposure data and any other information which seems necessary or convenient.

The prints are of such size, 3¼ x 5, that they can be kept in the ordinary 3 x 5 commercial card file box and the double weight paper will stand up very well. Tabs can be arranged corresponding to our classification, the prints located behind their proper tabs and the index and record is complete.

But we have more than a record, we have a Card Album that surpasess all in convenience and fool proofness. No more can a fair caller paw over our album and say; "Who is that?" "Your Grandmother!" It doesn't look any more like her than I do." No more can anyone poke fun at a beloved photographic failure because it happens to be pasted fast beside a "success" we are anxious for him to see; a failure that is entitled to a place somewhere because of the things it recalls. People may now look at our work; "By our leave." They may see few or many pictures as we choose, the good ones we hand out for inspection, the poor ones we palm, all under



FOCUSING EASEL LLOYD RINGER

the pretext of keeping the file in order.

There are other advantages also; let us suppose that we are going out after a certain street scene, by referring to the prints behind the tab marked Street Scenes we can in a few moments look over our past successes and failures and the data will be available with the prints. And then notes can be made on the backs of the prints, at any time the spirit moves, calling attention to some special treatment to be accorded the picture at some future date.

The system is capable of cross indexing. Should a picture seem to fall in two classes, two prints have to be made. If any class becomes too large and contains too many prints for convenience it is easy to subdivide that class, all that is necessary is to make new tabs and change the class number on the prints of that class. To be sure we must run through a few prints in our efforts to find a certain negative but that can be done in a moment and we are handling prints which can be replaced, not negatives where a slip of the hand may cause a bad scratch or a broken plate.

All this sounds like spending considerable time and energy and a little extra money but it is worth it. The author has gone back over some 500 old negatives and has nothing to regret but much for which to be thankful. — H. H. VAN KENNEN.

HOW TO MAKE AN ADJUSTABLE FOCUSING EASEL FOR ENLARGING

Take two wooden strips about one inch square, one about four feet long and the other about one and one half feet long. Cut a notch in the center of the smaller strip so that it will fit over and slide up and down the longer strip easily, a metal strap holding it at the bottom. Fasten two sprocket wheels below the longer strip, at the ends, as shown in the illustration. One of these should be fitted with a thumb screw or some other means of turning. The easel can be most conveniently made of a large printing frame, large enough to accommodate the largest print that will be made. This should be fastened to the cross strip so that it is exactly perpendicular to the work bench and parallel to the plane of the negative. A piece of ladder chain is then fastened to the cross strip and carried forward over the front sprocket, back to the other sprocket and forward again to the easel to which it is attached. Then, by turning the thumb screw, the chain causes the easel to move backwards or forwards, always maintaining its perpendicular position. The sprocket wheels can be obtained at a piano repair shop. By adding another chain and sprocket, this idea might be applied to an easel that is suspended above the work table instead of resting on it. — LLOYD RINGER.

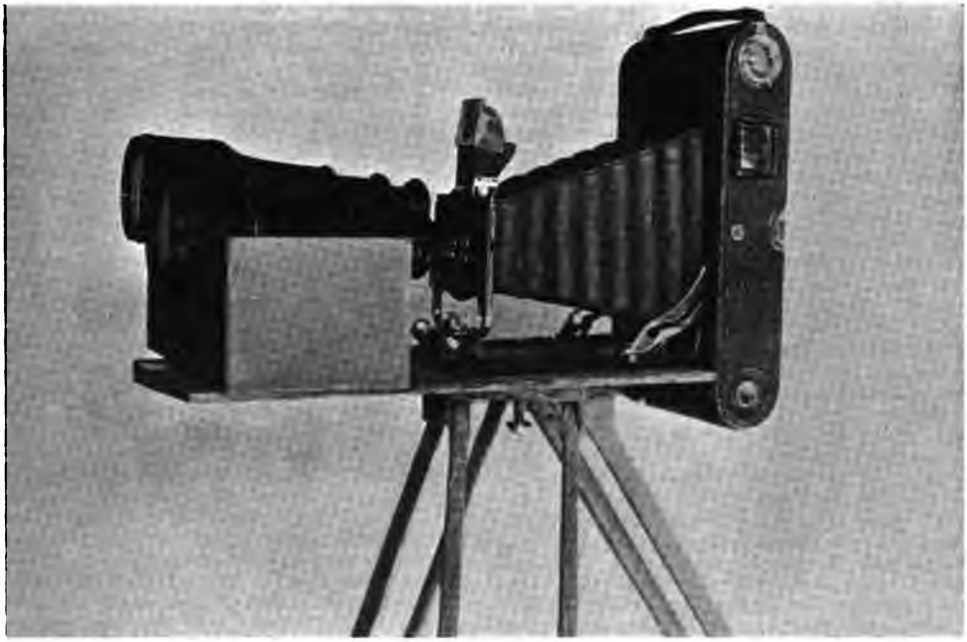
A DOZEN DONT'S FOR PHOTOGRAPHERS

1. Don't fix plates in a flat dish unless you agitate the contents constantly. Use an upright dish with grooves along the sides to grip the edges of the plates. This will prevent uneven fixing.

2. Don't assume that the electric light bulb which you use in your printing-box will always give the same amount of light. It not only grows less efficient with age, but the light usually dims at the fall of dusk when many other lights are put into use in stores, homes and public buildings, on the same line.

3. Don't blame the films if they appear fogged, until you have made sure that the camera bellows are absolutely light proof. A tiny hole, impossible to detect from the outside, may be doing the mischief. Remove the back, place your face in the opening with a black cloth over your head and with the shutter closed, carefully inspect all of the crevices and bends of the bellows. You will find the leak if there is any Cut a thin piece of leather and glue it in place

4. Don't forget that dust is your standing enemy. Go over plate holders and slides with a rag moistened with glycerine. Dust out the inside of the camera. Inspect the lens and if particles of dust are between the components, take them apart and clean.



KODAK ARRANGED FOR TAKING TELEPHOTO VIEWS — CHAS. J. BELDEN

5. Don't ever attempt a time exposure without the tripod or a solid foundation. It is better to stop the diaphragm down to a small aperture and give one second exposure, than to give one twenty-fifth with the full opening.

6. Don't be continually wishing you had a better camera. Learn to know your machine. Study poor or spoiled exposures and determine where the trouble is.

7. Don't be content with only snapshots. Try an occasional indoor picture, now and then a portrait, and once in a while a difficult picture. In this way you will soon know your machine and will be able to come home without any "flukes."

8. Don't guess at the distance when using the portrait attachment. Use a yardstick or tape measure. It will insure proper focus and prevent a possible failure.

9. Don't treat your camera as you would a kit of tools. The delicate lens and shutter adjustments are easily deranged and excessive vibration is apt to chip the lens.

10. Don't run the risk of cutting off some of the scene or view. Many excellent photographs are ruined because not all that showed in the finder came out on the negative. Until you get used to your machine, draw lines to include both rectangles on the glass of the view finder, using writing fluid. In this way, you can't go wrong.

11. Don't make the mistake of under-exposing indoor pictures. Remember that with but two or three windows through which light can come, the relative amount of light indoors and out is reduced to the ratio of about 1 to 30.

12. Don't be careless about the removal of the film after exposure. Wind the spool tightly and seal it. Then, if the film is not to be developed at once, keep it in a dark place. Light is apt to creep in at the ends and the prints will have smoky edges.
—DALE R. VAN HORN.

TELEPHOTO PICTURES WITH A KODAK

The mere mention of a telephoto lens to the average amateur immediately gives rise to ideas of excessive cost and of a knowledge of photographic technique far beyond him. Long distance pictures made with the telephoto lens always hold a fascination for amateur or professional, but the cost of such lenses puts them out of the consideration of most amateur photographers.

To anyone of an experimental turn of mind, exceedingly interesting and beautiful pictures of distant mountains or objects may be obtained with a film kodak by the use of a pair of field glasses. The regular kodak lens should first be removed. The field glasses can then be mounted in front of the kodak as shown on the illustration, so that the eye piece covers the opening in the shutter. The back of the kodak should be removed and a piece of thin paper stretched over the film rollers. The picture can then be focused on this by means of the adjusting screw on the glasses.

Exposure will be largely guesswork at first, but experiment has shown that a good starting point with an average pair of glasses is about twenty times that given with the kodak lens at full aperture.
— CHARLES J. BELDEN.

THE ROUND PRINT

There are times when a photographer finds it desirable to trim a print to a circular shape and, usually such prints are trimmed by means of a metal "cut-out" of the right size and a cutter consisting of a steel cutting wheel, the same as is used in a "Red Devil" glass cutter, set in the end of a short upright steel rod which is attached to a handle in such a way that it can revolve freely. The trouble with this method is that the opening in the "cut-out" may be either too large or too small and it may not be possible to buy one that is exactly the right size. A separate "cut-out" has to be obtained for each size and if many different sizes are needed a large supply of "cut-outs" must be secured. The method we are about to describe, however, makes it possible to trim a print to a circle of any size from 1½ inches to 30 inches in diameter. The cost of the apparatus is small, from 10c to not more than $2.00. Take a piece of any old board about 1 inch thick and on the back of it, close to each end, screw cleats about 1 inch wide and as long as the board is wide, to keep the board from warping. This board may be any size that is convenient; the writer's is 16 inches square. Cover the top of this board with a piece of zinc. A 10c glass cutter, such as is used for cutting glass for round frames, completes the outfit. The cutter consists of a wooden base about 3 inches in diameter, ⅜ inch thick in the center and running down to a thin edge. The top is flat and in the center is a small hole. The guide arm is a heavy wire or light steel rod about 15 inches long with one end bent at right angles and inserted in the hole in the base. The steel cutting wheel is in a movable head which is held in position on the rod with a thumb screw. Determine the diameter of the print and adjust the cutter accordingly. When using this, hold the base firmly with the left hand, take the cutting head in the right, swing it as far to the left as possible, and, with a rather rapid, steady motion, using a firm pressure, swing the head in a complete circle with one uninterrupted movement. This will trim the print evenly and leave no white edges. If a white margin is required, careful adjustment and accurate placing of the cutter on the print are essential. If much work of this sort is to be done, it would pay to get a better cutter instead of the 10c one, such as the "Red Devil" circular cutter which costs about $1.50. On this instrument the base is made of hard wood, it has a knob to hold it, and its face is covered with rubber packing which prevents slipping or marring the print; the arm is square, nickel plated, and is graduated to sixteenths of an inch, the head is adjusted by means of a thumbscrew and the cutting wheel is renewable, six extra wheels being provided with each instrument. The writer made three extra heads out of maple. One of these was fitted with a ruling pen with which lines could be drawn around a print. Another was fitted with a piece made from part of a bone knitting needle which was used to score lines around a print. Another was fitted with a broken, slender knife blade, set at an angle of about 45 degrees. Used on double weight paper and giving an inch or so margin, the bevel makes the print look as if it were mounted on a heavy beveled edge mount. The ingenious worker can modify this cutter to suit his needs, and will find it exceedingly useful in many ways. — George Reed Stevens.

P. O. P. TONES ON BROMIDE AND DEVELOPING-OUT PAPERS

There is something about the tone of a P. O. P. print that many people have a distinct liking for and very often they prefer the purple-chocolate color of a well toned P. O. P. print to the blacks and sepias of development papers. This purple-chocolate tone can be obtained on development papers in two ways, either of which is capable of giving a print that will deceive all but the most expert; one is by the judicious use of the hypo-alum bath and the other by re-development. With both methods, exposure is a controlling factor which needs careful attention.

The hypo-alum bath is made by dissolving 4 oz. of hypo and 1 oz. of white alum in a pint of water which is afterwards boiled for a minute or two. When cool, the addition of about 80 square inches of old or spoiled printing paper, either P. O. P., self-toning, bromide or D. O. P., will ripen the mixture and render it ready for use. Once ripened, it will keep indefinitely if occasionally freshened with a little unripened mixture and a little water. In the usual way this bath takes from thirty minutes to two hours to tone when hot, but there is a way of expediting matters and that is to fix the prints in plain hypo and transfer them straight to a bath of dilute sulphuric acid. After about one minute in this, they will tone rapidly in a warm bath of toning solution. No washing is necessary until they are toned and sponged. The acid should be of about 2½% strength, 1 part to 40, and unless the worker is fully accustomed to using this acid, it is better to buy it diluted or get an experienced druggist to make the mixture of acid and water. Great heat is evolved when concentrated acid is mixed with water, the temperature being raised to nearly boiling point. Care must be used therefore in mixing it. Always add the acid slowly to the water, never water to acid. In the acid bath the hypo in the prints is decomposed with the formation of sulphur in contact with the silver image. It is this that accelerates the toning. A sudden milkiness in the acid bath is a sign that the action has definitely taken place and if this occurs before the minute is up, the prints can be at once transferred to the hypo-alum bath where they will tone to the desired color in a minute or two. This toned image, being silver sulphide, is very permanent and will not discolor or fade under conditions that would damage a black and white image.

The second method of toning is to bleach a well washed black and white print in the usual ferricyanide bleacher and redevelop in a special pyro formula for bleaching, use:

Potassium ferricyanide	1 oz.
Potassium bromide	1 oz.
Water	10 oz.

There are other formulas that will answer just as well. The redeveloping solution is made by dissolving in the following order:

Potassium metabisulphite	20 gr.
Sodium sulphite	1 oz.
Pyro	60 gr.
Potassium bromide	60 gr.
Sodium carbonate	1 oz.
Water	20 oz.

The redeveloped print needs washing but not fixing. As far as permanence is concerned, it is equal to a black and white print, the image consisting of pure silver.

The exact tone in both cases is decided by exposure, though it may be as well to mention that a flat print, unless it be very dark, never has a sufficient depth of silver to tone richly by any process. Granted that the combination of negative and paper is calculated to give a bright print, the exposure must be full without being excessive. Underexposure will result in "forced" bluish-black tones and overexposure, if excessive, results in muddy tones. — J. R. Hall.

THE QUESTION BOX

WINNING ANSWER TO MAY QUESTION

What advantage, if any, has daylight enlarging over enlarging by artificial light?

Not much can be said in favor of daylight for enlarging work. In the first place daylight cannot be relied upon as its intensity constantly varies throughout the day, to say nothing of sudden variations that might be caused by clouds, smoke, etc. And in the evening, when most amateurs have their spare time, daylight will be found very feeble indeed. Then, too, some elaborate enlarging outfit must be rigged up to a window ("preferably with northern exposure") and it must fit light-tight if one would keep his bromide paper unfogged.

The argument will be advanced, no doubt, that daylight is much faster than artificial light, i. e., than the ordinary tungsten bulb light. Well, any photographer who has reached the stage where speed is a necessary consideration would do well to invest in an arc-lamp enlarger. He will find this quite as speedy, if not more so, than his "northern exposure."

Artificial light has everything to recommend it! Manufacturers make enlarging outfits especially adapted to the electric light, tungsten or arc; electric illumination is practically constant in candle power and it is available day and night; finally, it is easy to manipulate and sensitive papers can be handled in its proximity without danger of fogging.

In conclusion, daylight has *no* advantage over artificial but it will be found a good substitute by the enthusiastic amateur who has no means of securing the electric current. — George A. Beane, Jr.

Comments by Question Box Editor. — Mr. Beane's answer requires some qualifications. Although daylight enlarging is no longer popular, it nevertheless has some advantages, one of which is that of speed. True, ample speed can be obtained by the use of a sufficiently strong artificial illuminant, but a check-up of amateurs would show that for one reason or another comparatively few who do enlarging really do use one of the more powerful electric lamps, or are situated to do so. With some popular types of enlargers it is not practical to use these extra-strong illuminants and the speed is actually so slow that bromide paper must be depended on for the print. Daylight, on the other hand, is so fast that exposures no longer than are ordinarily required for bromide paper with an artificial-light enlarger, are ample with a daylight enlarger on the slower chloride papers, such as the regular grades of Cyko, Velox, etc., with which it is easier to obtain a print of the desired quality. In fact, the Question Box editor has found that with one popular type of artificial-light enlarger it required from ten to fifteen minutes to obtain a three-times enlargement from a negative of slightly more than average density on bromide paper, whereas with his old daylight enlarging equipment he was able to get a greater degree of enlargement from the same type of negative on slow gaslight paper in about fifteen seconds — or less, if he used the lens wide open.

A further advantage of daylight for enlarging is one quite commonly overlooked. This is that diffusion is much more easily obtained. Graininess and scratches in the negative are not so likely to be recorded in the enlargement if daylight is used.

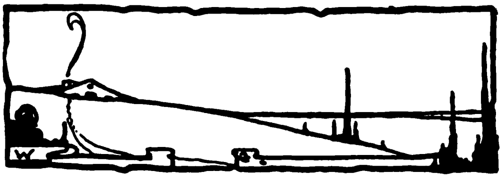
The difficulties with daylight for enlarging are that it requires a more or less inconvenient installation, that it is frequently not available when one wants it, and that it is variable. But anyone with a permanent workroom for photography can overcome these difficulties to a considerable extent.

AUGUST QUESTION FOR READERS

How has proficiency with the camera proved of assistance to you in your profession or vocation?

This question of course applies to those who are not dependent on photography for a living. For the best answer received by September 15, a credit of $2.00 towards books of our publication will be awarded.

Address the Question Box Editor, write on one side of the paper only, and please put any other communication on a separate sheet. The contest is open to all readers of the magazine, whether regular subscribers or not.



LOCAL MANIPULATION

This month I want to use most of my space for a letter received in the spring from a Chicago reader who has the knack of telling her experiences in an interesting manner. She says:

"You want to know in what way photography has served my personal interests.

"I travel quite a bit, and take my A-1 Graflex and Ic Tessar lens with me. Its peculiar construction attracts attention, and there is generally someone in the crowd who announces that it is an expensive instrument, etc. Some take me for a newspaper woman and some take interest in what I am taking, and I find my Graflex has been a good ice-breaker and mixer, and I have made many pleasant acquaintances besides taking snapshots, which serve as a diary of my trip.

"Two years ago I was in the vicinity of Asheville, N. C., waiting after a hike at the country store for the interurban. The storekeeper asked me to take a picture of her chickens. I refused, saying the next train would bring me in for supper. She urged me to take the pictures for supper and an auto ride to town. Now in fact I would gladly have paid for the experience of having a real country supper, but here my camera brought me a fine supper, pleasant company, and an auto ride — all for a few snapshots. I liked the snaps so well that I used one of them in a market report.

"I am in the farm-produce commission business and have used several snapshots on market-report covers. Those illustrating the prize-winners in the

GUARDIANS OF THE HILLSIDE CHARLES I. WESTCOTT

Made with Convertible Lens at f:14

annual river marathon were taken from the window at my desk. Our store backs up against the river.

"Many years ago, when the initiative, referendum, and recall were advocated in Illinois, I was asked if I could photograph pledges made by candidates and officials. With rubber bands I fastened a honey-box to my 5 x 7 extension Kodak, fastened the plate attachment to the rear of the honey-box, pasted black paper inside, and made successful copies. But was it a coincidence that most of the pledges had been written on shiny paper with the palest of blue ink?

"There's no end to the interesting experiences I have enjoyed. The Chicago Gas Company laid new pipes in our street and killed many elms. My pictures of the trees 'before and after, secured two new elms to replace two dead trees.

"My advice to anyone interested is to start with a cheap camera using small-size films, and if the interest keeps up to then secure a 4 x 5 plate camera, for without plate experience no one can understand how to work. Then after experimenting with the ground-glass, developing films and plates in trays and tanks, there is a good foundation and the interest in photography is there to stay. The saddest thing I know of is buying a 5 x 7 or postcard film camera as a starter, especially when prices are so high. Use small films and enlarge your favorites.

"I cannot close without recording another experience. In the spring of 1914 I visited Europe Arriving one morning in a quaint village just west of the Rhine, I was astonished at the old vine-covered and vine-ornamented houses, at the many arches, gates, etc., but I soon felt like a comet or an organ-grinder or the Pied Piper, for there were from thirty to fifty children at my heels and they always made a foreground when I stopped. They were so nice and behaved so well that I enjoyed it. They directed me to the important places, to the big trees in the school-yard, the church, the bridge, and the Roman ruins. I was a total stranger. These children, or others like them, raised in these quaint homes decorated with blooming vines, with lace curtains at the windows, stone pavements, beautiful arches and old, old trees, now have colored troops patroling among them. I look at my pictures and remember Wilson's 'Is there a man, is there a woman, is there a child that does not know that this was an economic war, a war for trade?' It certainly was not a war for humanity's sake. My blood boils when I look at these children. How many have lost their parents? How many have survived? Who has gained? Anyone besides the profiteers? These children's parents were heavily taxed for Prussian militarism. Let us shoot with cameras only. Let us gave general disarmament and do away with taking human life. You see, I am a sort of near-socialist."

One thing I like about this letter is a thing noticeable in almost all letters from people with a permanent interest in photography — the evidence of a settled scheme of life. So many people today are in an unsettled, uncertain attitude with regard to things in general When it comes to a matter of relaxation, this must always have excitement to it to keep them from thinking of their troubles. Your genuine amateur photographer, however, is a person of poise and balance who has worked out a philosophy of life and moves sure-footed towards the goal.

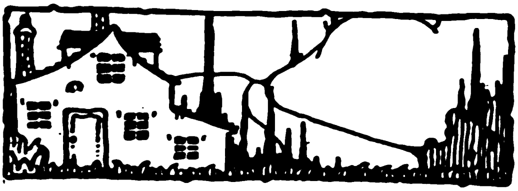
I have had people say to me, "More than anything else I should like to be an artist with nothing on my

GUARDIANS OF THE HILLSIDE CHARLES I. WESTCOTT

Made with No. 8 Pinhole

mind but the delightful opportunity to paint landscapes and really enjoy the scenery I get glimpses of on my tours. But business is such a scramble that I don't dare let myself get into a contemplative mood for very long at a time. Maybe in ten or fifteen years the scramble will be less demanding, and then I shall be able to sit down and enjoy thing as I want to."

But perhaps in ten or fifteen years the desire will be gone. That is the price of denying natural impulses. So I often think that those who can get their scheme of life worked out early are especially fortunate, for then, with the discontent and restiveness which comes from uncertainty as to the future largely banished, they can make a place in their lives for the gentler influences of art and kindred cultural enjoyments. — THE INTENSIFIER.



SKETCH-BOOK LEAVES

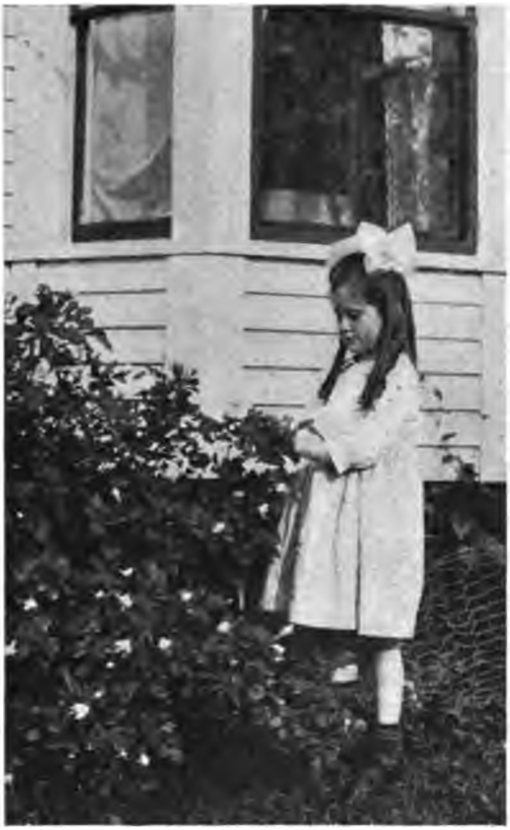
LANDSCAPE PHOTOGRAPHY WITH A HAND CAMERA

This is a big subject, impossible to cover fully here. The purpose is rather to touch on a few points of practice and procedure which it is hoped will prove helpful to the reader in his rambles afield. It is intended chiefly for such as use roll-film cameras up to postcard size, and the indulgence of the more experienced is asked if the points brought out seem rather elementary.

A hike across country or along country roads in pursuit of landscape subjects is delightful from any point of view, and, regardless of whether the resulting pictures are models of perfection or quite otherwise, the time so spent is profitably employed. But what is worth doing is worth doing well, and subsequent excursions will be more fully enjoyed if the pictures first made are really good. This brings us then to the most sweeping criticism of landscape photographs made by amateurs — their composition, or, if you please, their lack of it. There is a big difference between photographing scenery and making landscape photographs, but the beginner is rather slow to appreciate this point.

Anyone who goes in for landscape work should preface his trips afield with the perusal of some good book on composition. This is no painful prescription. In fact, the enjoyment of his trips will be greatly increased thereby, for instead of looking vaguely for attractive subjects he will be constantly on the alert for certain combinations of line and mass, and, like the hunter who knows the habits of his quarry or the fisherman who knows the subtle ways of trout or bass he will find a zest in the pursuit of subjects which is denied to those who proceed by rule of thumb.

In selecting subjects, one point always to be kept in mind is that the section of view selected for the picture must be considered entirely by itself. This is the only part which the negative will record; it must therefore be self-sufficient and complete. Where the surroundings are beautiful or impressive, this may seem a hardship, but the circumstance works



Criticism Print No. 29 **Ralph Farnum**

in one's favor where the surroundings mar the section one has selected.

Another point is that ordinarily one should not attempt to include too much, except, of course, where the purpose is not so much to make a picture as to obtain a record of the location or view as a whole. Where this latter is the purpose, it should also be remembered that recording extensive general views with a small hand camera is not very satisfactory as a rule, inasmuch as everything is rendered on so small a scale. If, however, the negative has not been flattened out by overexposure, an enlargement conveying a sense of depth and bigness can be obtained.

In landscape photography it is well to remember the old Greek adage, *not many, but much*, or, as we commonly hear it, *quality, not quantity*. Some amateurs proceed on the theory that in numbers there is safety and that if they make sufficient exposures they will be sure of getting a few that are worth while. It is much better to concentrate on a few and pass up the other exposures. Good selection is nine-tenths of success.

Point of view is decidedly important. In fact, many an excellent subject must be abandoned for the simple reason that it is impossible to obtain a suitable viewpoint. But in many such cases it is possible to get an attractive picture from a portion of the subject.

The lighting should always be given close attention. By the beginner, sunshine is often thought of simply as a convenience, enabling him to make a snapshot or hand exposure instead of resorting to a tripod and giving a time exposure. But sunshine plays a bigger part than this. It changes entirely the aspect of the scene, and is generally necessary if a brilliant effect is desired. Watch the direction of the shadows, as these will enter into the composition. If a subject does not look quite right, figure out how it will look when the light has changed.

These are only a few of the points to be considered in making landscapes, but they are fundamental, and attention to them will smooth the way to satisfactory results.

THE ILLUSTRATIONS

The two pictures by Mr. Charles I. Westcott are interesting as showing a comparison between the result obtained with a lens and the result obtained with a pinhole on the same subject, though the reduction from 4 x 5 will make the difference somewhat less apparent. One picture was made with a 6¼ inch Rapid Convertible lens stopped to *f*:14, the other with a No. 8 pinhole.

READERS' CRITICISMS

BEST CRITICISM OF PRINT NO. 29

We (*viz*. the writer) recently bought — but have not yet paid for — Professor Arthur W. Dow's "Composition," which we pronounce a most excellent work. Emerging fresh from the reading thereof, we approach Mr. Farnum's print looking for line harmony and for "notan." We cover the picture with a sheet of semi-transparent paper, take brush in hand, and trace the essential lines of the composition — the vertical lines of the two windows and of the figure, together with the horizontal lines at the base of the windows and the undulating diagonal line formed by the rose-bush. Keeping thus to essentials, we have what, to us, is a very agreeable, but by no means striking or startling arrangement. We think we like it better if we trim a half inch from the top.

Then, similarly, we block in the lights and darks. Again we like the pattern. There is good balance — good spacing. The trimming suggested brings the child's head in a more emphatic position. Emphasis has already been secured by the juxtaposition of the dark curls and the white wall. The interposition of the white ribbon between the hair and the dark window is very skillful.

So far all's well. Then we consider the representative phase of the picture. It is the picture of a little girl. Is she well treated? Yes. Her face is well lighted; texture of hair is well shown. We might wish for better indication of texture in her frock, and possibly a little better modeling of the arm and leg.

So far we have kept to the essentials, but now the non-essentials cry so loud for attention that they cannot be ignored. The little square of reflected light in the upper right-hand corner of the window at the right would be removed by the suggested trimming from the top. The chicken wire in the lower right-hand corner might have been removed before the exposure was made; would that it had been. And the clapboards (it is our firm belief that, with the possible exception of brick walls, clapboards are the most pernicious anti-art influence in amateur photographic practice) could be persuaded to scream less loudly by application of a pencil to the negative. — Bert Leach, Portsmouth, Ohio.

OTHER CRITICISMS

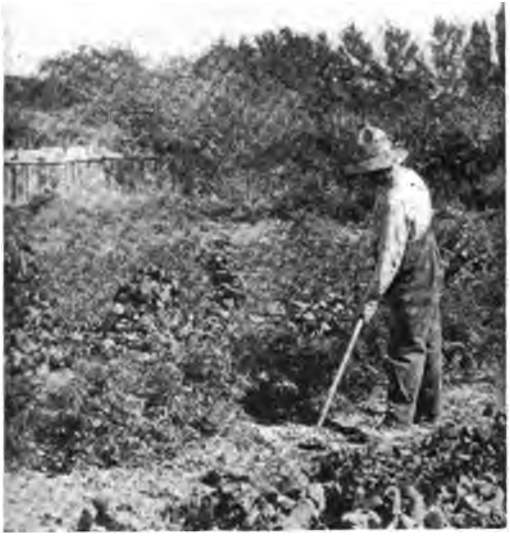
It is inevitable that the amateur photographer will occasionally forget his background. In Mr. Farnum's print this is perhaps forgivable; so charming a young lady must needs have been the center of attraction — background was of no consequence. But there's the rub — it *is* of consequence, and where it may not seem to manifest itself displeasingly while one is taking the picture, it ofttimes proves terribly obtrusive in the finished print. So it pays to give the background just as much thought and care as one does the principal subject.

Here the glaring white clapboards and their parallel lines of shadow not only offend the eye but they make the child's face and hair appear darker by contrast. The windows also, with their dark rectangular frames, are too much in evidence, but unfortunately they cannot be trimmed away. We might clip about an inch from the top but we would still have a distinct upper and lower half, one light and one dark. Luckily the shrubbery helps break up the sharp dividing line. One fourth of an inch trimmed from the left will remove the disagreeable ruler-edge lines. The wire netting could have been dispensed with altogether.

The child's pose is natural and hence pleasing, but her left hand should never have been concealed behind the foliage; it would have shown to advantage. And now in conclusion I'll touch on technique. Mr. Farnum states that he used a medium contrast paper; he probably found the next softer grade *too* soft. It will be found that when printing, with the medium contrest paper, one may get a softer result than ordinary by holding the frame close to the light, and then developing in a strong solution. Conversely, a soft paper may be made to yield a little more contrast than usual by holding the printing frame farther away from the light and developing the paper in a weak solution. Thus a wide enough range of tone values may be secured to satisfy any negative within reason.—George Beane, Jr.

This print has several features worthy of notice. The different parts nicely balance each other, the lighting is good, and the tones are correct, with the possible exception of the whites, which are slightly lacking in detail.

Its faults are those common to nearly all photographs taken by amateurs. There is too much in it — there are too many unnecessary articles. The wire screen does not add to the pictorial merit of the print. The background calls for too much attention. It is not subordinated enough, its details are too prominent, and it contains the principal contrasts of the picture. The use of a larger lens stop would have softened its outlines, and perhaps a different method of lighting or a different viewpoint would have rendered its details less conspicuous.



New Criticism Print No. 32

A PHASE OF SUMMER Ronald E. Cask

The little girl's face might have been turned a trifle more toward the camera, and both her hands shown holding the flower. Her attitude is a little bit rigid. It would be better if she were bending more to her act. — Ronald E. Cask.

NEW CRITICISM PRINT NO. 32

Readers' Criticism Print No. 32 is entitled "A Phase of Summer." It was made in Utah with a 4 x 5 No. 9 Premo on filmpack, at 4.30 P. M. in bright September light, the exposure being ½ second at *f*:22 with rear combination of R. R. lens. Development was in pyro in tank, and the print is on Artura N. C. Medium, Velvet.

For the best criticism of this print received by September 15 a credit of $2.00 towards books of our publication will be awarded. Address the Readers' Criticism Editor.

OUR COMPETITIONS

It is our intention to publish an advertisement each month giving the rules of the competition and serving as an entry blank. This is occasionally omitted through pressure on the advertising pages, but a supply of competition blanks will be sent to any reader who requests them at any time.

SENIOR COMPETITION

The first prize in the Senior Competition was awarded to J. H Field for his print entitled "The Man with the Bow." In spite of the interest in outdoor figure photography at present, we do not see as many photographs of male models as we should. This is a very excellent example of this type of work, the composition, the action and the modeling all being excellent. This was made in Arkansas with a 5 x 7 view camera equipped with a nine-inch soft-focus lens. The exposure in bright light at 9 A. M. in May was about 1-10 second at f:5.6. The Eastman film was developed in pyro-soda and printed on Artura E.

The second prize was awarded to Eleanor L. Smith for "Checker Enthusiasts," which is not only a very pleasing piece of photography but brings back to all of us the time when the day was not long enough for its manifold tasks and pleasures. Even after the kiddies are all ready for bed, they cannot resist the temptation for one more game. This picture was made in California with a 6½ x 8½ Century camera fitted with a seven-inch Cook lens. The exposure at 7.30 A. M. in California by light from a north window was 4 seconds at f:8. The Ilford Special plate was developed with Rodinal and printed on black and white Palladiotype. P. S. — We discover that the kids, instead of playing checkers when they should be going to bed, began when they should be getting dressed.

The third prize was awarded to Paul E. Guillot for his picture entitled "The Enchanted Pool." This was made in Tunisia and is a wonderful impression of brilliant tropical moonlight with its sharp contrasts. The ruins reflected in the pool, the low, rolling hills across the desert, the prickly pears in the foreground, all help to suggest the hot and arid plains of northern Africa. Made with a 4½ x 6 cm Zeiss camera equipped with a 75 mm Ic Tessar lens. The exposure by moonlight was 10 minutes at f:4.5. The Wratten Panchromatic plate was developed with Kraft's pyro-thermo-formula, and the print was made on carbon paper.

Honorable mentions were awarded as follows:

Ironing	Geo. W. French
Home Portrait	W. Kitchen
The Boy David	Lyle A. Morse
At the Old Drawbridge	Alexander Murray
The Connoisseur	Walter Rutherford
At the Temple Gate	Sotaro Saba
Reflections	Henry T. Stephenson
The Poplars	John C. Stick
Woodland Muse	A. S. Workman

Commendations were awarded as follows: —

Merok	Walter L. Bogert
The Minstrel	F. E. Bronson
The Way to the Woods	Franklin Chapman
In the Sunlit Garden	E. B. Collins
A Gray Day in the Valley	Fred E. Crum
The Heart of the Winter Woods	W. H. Finch
The Jovial Smoker	Jared Gardner
Tangerine Oranges	C. A. Heald
Hilarity	Roy H. Heiser
The Day is Done	J. K. Hodges
A May Portrait	Harry E. Horrigan
The Deserted House	Claude T. Hurley
Off the Beaten Track	Wm. B. Imlach
Homeward	Jrio Ito
Room 1042 Please	J. T. Johnston
Wild Flowers	E. Everett Jones
Portrait Miss C	Frank H. Luwen
Creekside	Dr. E. L. H. McGinnis
On the Shore of Minneola	Herbert C. McKay
Boy with Picture Book	Geo. Miller, Jr.
Chapel Entrance	Harold B. Neal
The Waterfall in Summer	Juventino Ocampo
Sunlight	Gregory L. Oliver
Snow-shoe Trail	Arthur Palme
Child with Doll	Julien J. Proskauer
Noon	Leo Rademaker
Landscape	H. B. Rudolph
Sunkissed	J. Herbert Saunders
A Day in May	Allen R. Schartzer
By the Camp-fire	G. W. Schinkel
Isabelle Miller	M. L. Sthattuck
Spring Blossoms	J. A. Singler
The Hay Raker	Kenneth D. Smith
Landscape	Oliver P. Young

JUNIOR COMPETITION

The first prize in the Junior Competition was awarded to Edwards H. Smith for his print entitled "Five Months Old." Everybody loves a baby and one of the most important uses of the camera is to secure a series of records of the baby from time to time as he grows up. It is rare that we find the baby photographed as charming as this, however. The composition is excellent, the photography is good and the baby is happy and contented. This was made with a 2¼ x 3¼ Auto Graflex Jr., equipped with a 4½ inch IC Tessar. The exposure in Wisconsin was a hand exposure of 1-5 second about 6 feet from the window in a well-lighted room in bright light at 2 P. M. in February. The pack film was developed in pyro in a tank and a part of the negative enlarged on P. M. C. No. 6.

The second prize was awarded to "Woods in Springtime" by H. J. Brennan, a print which, though it displays no marked novelty in arrangement, furnishes a very pleasing transcript of a scene which in its essential features might be duplicated almost anywhere. The perspective is excellent and the entrance to the picture very well managed. The values of light and shade form the principal attractiveness of the picture. Made with a 4 x 5 Korona view camera fitted with a 7-inch f:4 Verito, of which only the rear combination was used. The exposure at 7 A. M. in May in bright light was 2 seconds with a three times filter. The double coated Cramer instantaneous Iso plate was developed in pyro-acetone and printed on Artura Iris.

Honorable mentions were awarded as follows:

A Sweet Harvest	A. T. Flikke
In the Pines — Delano Park	Orman B. Humphrey
Virginia	Theodore McIntire
Sunset on the Pacific	Franklin G. McIntosh
The Willow Moon	O. R. Mills
Portrait of a Child	C. B. Rosher
The Windy Day	John B. Ziemanski

Commendations were awarded as follows:—

A Portrait of My Sister	Wm. E. Barr
Washday in France	Dr. Miles J. Breuer
Winter Symphony	Walter P. Bruning
The House in the Woods	Wm P. Burke
A Fertile Pasture	Milford S. Casto
Sycamore Trees	J. Lester Clyburn
To the White Mountains	Herbert L. Douglas
In God's Own Country	W. R. French
Drowsy Waters	Jas. R. Frow

The Brook	Edw. L. Gilroy
"Turkey Run" Bridge	Fred Goodin
Rural England	Jas. H. Grime
Ready for an "Airing"	Willard H. Harting
Of the Dartmouth Outing Club	Ralph S. Hayes
Secrets	C. V. Hewitt
Still Life Study	I. Higo
The Lighthouse	Harold Isaacson
The Lonely Bridge	W. Keibel
A Lonely Way	Henry Lam
Nature's Image	Philip Mehler
Old Field Museum	Frank Minarik
From the Mountain Top	A. W. Moreau
From the Port of Boston	H. W. Pontin
The Fishermen	W. H. Pote
Spring	Paul Richardson
Spring Verger at the Old Farm	Mason H.Seabury
The Vista	Leslie A. Shaver
The Fishing Boat at Anchor	Sterling Smith
Billy	P. F. Squier
The Strength of Hills	R. H. Watson
Portrait	Ernest Worden
The Morning Sunshine	A. S. Yoshida

THE ROLL OF HONOR

Several readers who have missed past explanations have recently asked questions about the Roll of Honor. The purpose of this is to encourage consistent work; consequently, a man does not stay on the Roll of Honor forever after once getting there. When one of our competing friends fails to get an award for six consecutive months, his name is dropped from the printed list, but the subsequent winning of another award brings the name back into the list with the previous credit added to the new one. When a contributor has received five commendations, his name goes on the list and remains in the class Commendations until five awards of some higher grade have been received. In other words, five commendations and four honorable mentions would be listed as nine commendations, but when another honorable mention or prize is won, the name would disappear from the class Commendations, and appear in Honorable Mentions with a credit of five. Commendations received after that time would not alter the standing, but honorable mentions or prizes would each add one to the total until five third or higher prizes have been won. Only prizes in the Senior Class are listed in the Roll of Honor, because Junior prize winners are promoted to the Senior Class.

ROLL OF HONOR
FIRST PRIZE

J. H. Field 9
George W. French 5

SECOND PRIZE

H. B. Rudolph 7
Kenneth D. Smith 7
Alexander Murray 6

THIRD PRIZE

J. Herbert Saunders 8
W. R. Bradford 6
F. D. Burt 6
Jared Gardner 6
Wm. J. Wilson 6
Lyle A. Morse 5
Mrs. Sterling Smith 5

HONORABLE MENTION, SENIOR CLASS

W. Kitchen 12
Sotaro Saba 12
Louis A. Dyar 11
Gustav Glueckert 11
Fred E. Crum 9
Herbert J. Harper 9
Juventino Ocampo 8
Walter Rutherford 7
Oliver P. Young 7
F. A. Northrup 6
Walter L. Bogert 5
Louis R. Murray 5
Edwin B. Collins 8
James Thomson 5
Elizabeth Wotkyns

COMMENDATION, SENIOR CLASS

Dr. E. L. C. McGinnis 16
Gus Schinkel 15
J. A. Singler 15
Carlos F. DeMoya 14
Arthur Palme 14
E. E. Jones 13
Julien J. Proskauer 13
F. E. Bronson 12
C. M. Harris 11
J. K. Hodges 11
Frank R. Nivison 11
B. M. Whitlock 11
A. C. G. Allison 10
Frank King 9
Leo Kraft 9
Herman D. Warren 9
Geo. Miller, Jr. 8
H. B. Neal 8
Stephen J. Bushya 6
John N. Consdorf 6
Victor D. Elmere 6
W. H. Finch 6
R. M. Hart 6
Wm. B. Imlach 6
Jiro Ito 6
Gregory L. Oliver 6
M. L. Shattuck 6
Paul E. Guillot 5
Roy H. Heiser 5
H. E. Horrigan 5
Frank H. Luwen 5
Herbert C. McKay 5
James J. Ryan 5

HONORABLE MENTION, JUNIOR CLASS

Robert E. DeLand 5
J. W. Jeffers 5
P. F. Squier 5

COMMENDATION

John Ziemanski 26
W. Keibel 24
F. H. Chant 22
Edwards H. Smith 20
Garnet E. Jacques 19
Nat. S. Smith 19
Howard E. Louis 17
Harvey C. Pendery 17
Paul Richardson 17
Wm. E. Barr 16
H. J. Brennan 16
Edw. L. Gilroy 16
P. F. Squier 16
L. Archambault 14
W. W. Kuntz 14
Howard K. Rowe 14
Talbor Richardson 13
H. J. Mahlenbrock 12
A. S. Workman 12
J. R. Frow 11
Willard H. Harting 11
C. V. Hewitt 11
Simon Jochamowitz 11
Alfred S. Upton 11
Miles J. Breuer 10
Walter P. Bruning 10
Wm. F. Lowe 10
M. W. Osterweis 10
Ivan Sokoloff 10
John H. D. Blanke 9
Marjorie Chater 9
Herbert L. Douglas 9
A. T. Flikke 9
Fred Goodin 9
Stephen J. Palickar 9
G. A. Smith 9
B. F. Willard 9
Ralph Beebe 8
Edwin A. Falk 8
R. W. Garwood 8
Thomas C. Higgins 8
Hannah G. Myrick, M.D. 8
Ford E. Samuel 8
E. J. Williams 8
Geo. L. Heath 7
Mrs. C. H. Johnston 7
I. Komaniya 7
Harry Beeler, Jr. 6
E. J. Browne 6
J. L. Clyburn 6
John Janson 6
Arthur W. Moreau 6
Dr. C. W. Pratt 6
R. D. Wilson 6
Arthur S. Yoshida 6
R. E. Cask 5
Theo M. Fisher 5
James Owen 5
Hugh Palmer 5
H H. Van Kennen 5
Harold B. Winslow 5

OUR ILLUSTRATIONS

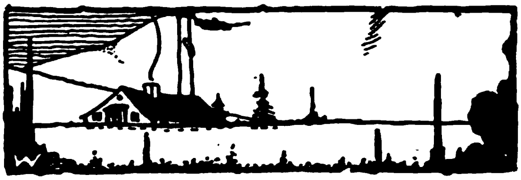
We are privileged to present to our readers this month several reproductions of photographs by the well-known English portrait photographer, E. O. Hoppe, who not only is one of the foremost portraitists of London, but has made frequent professional trips to the United States in the last two or three years. Mr. Hoppe, after many experiments with all kinds of methods and mediums in photography, has finally come to the conclusion that the only photography which will live is straightforward exposure which gets all the values in the original negative. Of course, he uses soft-focus lenses and other devices, as of lighting, to simplify tones and accentuate salient points, but handwork on the negative and control on the print is something which he believes has no place in photography. The master of this art must know his medium and use it exclusively. The portraits which we present are mostly of personages who have more than a national reputation. Probably the majority of our readers have read that beautiful novel "If Winter Comes" by A. S. M. Hutchinson, the poems of Ezra Pound, and novels by Galsworthy, so that they will be glad to see these striking presentations of these favorite authors. Each of Mr. Hoppe's prints is characteristic and each is a presentation of character which we believe to be sympathetic: they are certainly expressive. No data were furnished with the prints.

Mr. Macaskell's magnificent marine views, mostly taken during the International Fisherman's Race last year, are well eluciated in Mr. Hammond's article. We hope to be able to present another selection later on showing other marine work of this excellent artist.

"Day's End" by Francis O. Libby was not only shown in the Pittsburgh Salon, but, as we write these lines, is on exhibition at the Society of Arts and Crafts in Boston. Here Mr. Libby has hung an excellent selection of his recent works which show clearly his imaginative talent and excellent command of space and line composition. His prints are on a grand scale and his mountain photographs accomplish the difficult feat of really suggesting immensity and grandeur. Perhaps some of his works are a trifle weak in values, but he has chosen to sacrifice these for simplicity and boldness, and the result justifies the means, for the resulting prints produce the beautiful impression on the beholder's mind which the maker designed.

The portrait of Roshanara by Marcia Stein adds to the attractiveness of a pleasing personality the gracious beauty of a most attractive setting. The figure sufficiently dominates the composition, but the framing is extremely attractive.

"John" by Hugo van Wadenoyen, Jr., F.R.P.S., is a pleasing piece of portraiture in which everything has been simplified to the extreme limit in order to concentrate attention on the face. The personality is attractive and sympathetically rendered and the portrait is a decided success. Made in Cardiff, South Wales, with a one half plate Reflex camera fitted with an 18-inch Dallmeyer portrait lens. Exposure by electric light in a studio was 1 second at *f*:3.5. The Ilford Panchromatic plate was developed in Azol and enlarged on Illingsworth Cream Carbon B de luxe.



NOTES AND NEWS

Process Engraving: Formulas, Equipment, and Methods of Working, by Edward S. Pillsworth. New York, The Macmillan Co., 1922, Price $2.00.

This excellent little book, extending to about 180 pages, is a thorough and painstaking description of present-day American methods of making and finishing line and halftone cuts. It carefully details each step of the process from receipt of the copy until the cut is ready to deliver to the printer. It is neither very logically arranged, as routing and finishing are placed before the details of making the cut, nor is it free from annoying errors, such as ascribing the discovery of white line wood engraving to Berwick instead of Bewick, but it brings together very handily a mass of essential information which might have to be sought through several other books, most of them out of print. It is well illustrated, even profusely, through the author's sense of balance and proportion is so weak that articles of the most diverse size are jumbled together on one page with no indication of scale, a stop being almost as large as an engraving camera, and a focusing glass as a retouching desk and stand. In spite of these minor defects, however, the book can be commended to all who desire a comprehensive survey of modern engraving processes.

Mr. P. Benson Oakley of Geneva, New York, asks us to remind our readers that he is in the market to purchase photographs of news interest and will pay cash for those accepted.

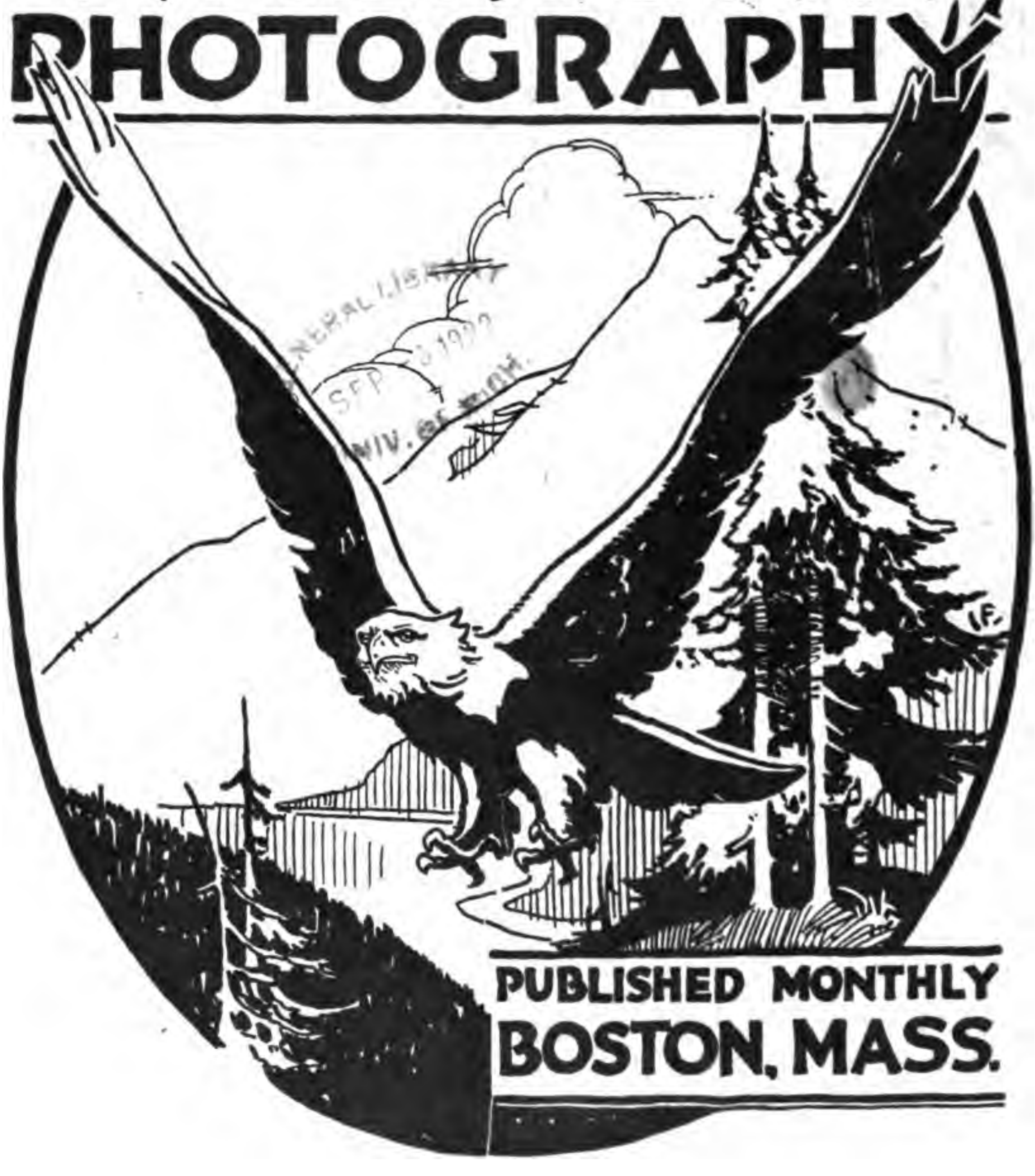
The Dark Room Club of Milwaukee has changed its name to The Milwaukee Camera Club. The club is growing rapidly and the members now number very nearly one hundred. The first exhibition of the club was held in the Milwaukee Art Institute in May and it was a great success. Mr. William C. Verburgt carried away three prizes, among them a first prize for landscape, and Mr. John H. Becker was awarded several honorable mentions.

FORTHCOMING EXHIBITIONS

Place	Date	For information write to:
Royal Photographic Society Closing date for entries, August 25th, 1922	Sept. 18 to Oct. 28	The Secretary, Royal Photographic Society 35 Russell Sq., London, W. C.
Frederick & Nelson	Nov. 6 to 18 inclusive	Frederick & Nelson, Seattle, Wash.
London Salon of Photography Latest date for entries, August 30th, 1922	Sept. 9 to Oct. 7	Hon. Secretary London Salon of Photography 5A Pall Mall East, London, S. W.
Camera Pictorialists of Los Angeles Closing date for entries, November 1st, 1922	Nov. 20 to Dec. 11	N. P. Moerdyke, Secretary 811 Washington Bldg., Los Angeles, California

SEPTEMBER 1922 25 CENTS

AMERICAN PHOTOGRAPHY



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List of Chapters

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2. Chemical Reaction
3. Light and Chemical Reaction'
4. Applied Photo-Chemistry of Silver Salts
5. Chemistry of Developments
6. Chemistry of the Fixing Process
7. After-Treatment of the Negative
8. Printing Processes with Silver Salts
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AMERICAN
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VOL. XVI BOSTON, MASS., SEPTEMBER, 1922 No. 9

THE SAN FRANCISCO SALON

C. M. HARRIS

SOME of the most prominent American pictorialists express the opinion that there are too many salons. Those who put forward this view are recognized leaders in the field, men whose earnest work and artistic ability have gained them such reputation and influence among their brothers of the camera that the standing of a salon is substantially enhanced by the mere fact of their contributing to it.

The opinions of such men command respect. They have but a limited time to give to their hobby, and with the increasing number of salons, would be able to exhibit only in a chosen few.

Yet there is something to be said on the other side. The crux of the whole matter lies in our conception of the mission of the salon. Does it partake of the nature of a competition, so that the hanging of one's work gives a feeling of satisfaction, as having earned the praise of the judges? Undoubtedly we feel something of elation when this public recognition is accorded our work. But though this may be a strong motive in submitting our pictures, it should be borne in mind that the main purpose of a salon is the encouragement, by example, of artistic ideals in photography. Those who visit an exhibition do so in order to learn something from the work they see. They come to view examples of the different processes, and of the old and new tendencies in art. They come to gaze, wonder, and analyze. The salon is their school, the only school they have; so should it not be made accessible to as many as possible, for the encouragement of the art, and for guidance in artistic expression?

A multiplicity of exhibitions is not desirable, for each worker could not be expected to contribute to more than four or five at the utmost. But assuredly four or five traveling exhibitions could be arranged, each to cover a different section of the country, and to be shown according to a previously arranged itinerary in the chief towns of the section. In this way a vastly greater public would be reached, and a beneficent effect on American pictorialism would be felt. AMERICAN PHOTOGRAPHY, in its usual progressive spirit, has pioneered the way, and has performed a notable service for pictorialists, in sending the pictures awarded prizes or honorable mentions in its recent annual competitions, on a tour of the country.

The Pictorial Photographic Society of San Francisco is to be heartily congratulated on the showing of its first annual salon. The exhibition as a whole is of so high a grade as to exceed the fondest expectations of its promoters. The beautiful Fine Arts Palace, which will be well remembered by those who visited the 1915 Exposition, forms an ideal setting. There are 343 prints, which are shown to the very best advantage, in uniform frames, under glass, from three to five prints in a frame. Each worker's exhibit has been kept together as far as the size and character of the individual pictures would permit. Ample space being available, all the prints are at eye-level, their position and lighting being the most favorable possible for their critical examination. The diversity of processes and styles bears witness that the jury has been very happily chosen. Merit, whether of the old school or the modern, has been recognized. The catalogue has one very desirable feature which other salons would do well to note. Against most of the titles is stated the process used.

Bromoil seems to be gaining in favor. Dr. Chaffee shows five pictures in this medium maintaining his usual standard of excellence, and in "Off Brisbane," a marine in an appropriate shade of blue, showing a pleasing arrangement of fishing vessels under sail, and "Polperro, Cornwall: Early Morning," a delicate and delightfully impressionistic harbor scene, he displays new tendencies. Dr. A. Goetz, besides three attractive nudes in bromide in his usual style, contributes "Old Strasbourg" and "Venetian Reflections," two street scenes in bromoil, displaying considerable technical ability in his new medium. Among other commendable bromoil exhibits are Joseph Petrocelli's three pictures, of which "The Curb Market" calls for special mention; K. E. Robinson's "Manila Cathedral," and Chas. Smith's three pleasing pictures of the Holy Land.

Bromoil transfer finds excellent exponents in Fred Judge, F. R. P. S., of Hastings, England, and Arthur Kales. The former gives us four pictures of the most diverse subjects, but all of equal excellence in presentation, artistic merit, and technical skill. The latter, in addition to portraits in his usual manner, shows "North Rim, Grand Canyon," a very artistic rendering of a difficult subject.

Among the bromide and chloride workers, the British contributors are conspicuous for their technical skill and finish, though, with few exceptions, they appear to follow tradition more closely than do the Americans. The latter have more spontaneity, and their trend is more modern. John M. Whitehead, of Alva, Scotland, shines forth by reason of the romantic atmosphere with which he has been able to invest his four landscapes. Captain Alfred G. Buckham, F. R. P. S., late of R. A. F., of London, contributes three strikingly pictorial aeroplane pictures which are a decided novelty. His beautiful cloud masses are wonderfully rendered. In his "Two Miles Above the Earth," simplicity is the keynote. "Rainstorm Sweeping over Durham" depicts storm clouds over the city with its winding river, while a shaft of sunshine breaking through throws into pleasing relief the cathedral; and "Strife," a destroyer at full speed ahead amid turbulent waters, with an aeroplane above, is the most dramatic of the three. Chas. K. Archer presents, among other pictures, "The Devil's Cauldron," a swirling mass of water about the base of a rock, with a very pleasing pattern of concentric irregular curves.

There is a curious difference in the characteristics of the American and European workers in gum. The American work, ably exemplified by Dr. Lovejoy, F. O. Libby, and N. P. Moerdyke, shows remarkable breadth of treatment and artistic conception. The European prints are noticeable for their small size and their display of minute detail, which, however, is well subordinated to the main theme — witness "St. Stephen's Tower," by Frank Holluber of Vienna, a study in roofs, with a graceful spire overtopping them. The detail in this is almost microscopic, yet it does not obtrude.

Hugo Erfurth, of Dresden, strikes a new note in photographic portraiture with his

OFF BRISBANE

A. D. CHAFFEE

San Francisco Salon

"Head of a Boy," a half-length figure with a background of distant landscape, which is distinctly reminiscent of the English painters of the 18th century; and Ida Krajewski's bromoil of "Beatrice" is quite pre-Raphaelite in its conception, and has a very decorative pattern.

Oriental influence is shown in the work of Laura Adams Armer, with two Chinese still lifes; Anne Brigman, with two Japanese still lifes; James N. Doolittle's charming Japanese study, "Orientale"; and J. Noguchi's (Honolulu) "The Light Beyond," a beautiful portrayal in gum, in the true Japanese manner, of a gnarled pine tree.

There are a number of exponents of modern tendencies. Margaret Watkins has made some most remarkable pictures from an assortment of kitchen utensils. The best of these is composed of a kitchen sink, three eggs, a dishcloth, and portions of two pans. With this most unpromising material Miss Watkins has succeeded in making a most satisfying picture. Johan Hagemeyer strikes the ultra-modern note with his four prints, and in "Late Afternoon Shadows," with its masterful handling of light and shade, shows the beauty that an artist can see in the commonest of street scenes. Edward Weston's "Girl in the Canton Chair" is a finely decorative composition in his best manner, and Jane Reece is at her best in "The Man and the Mask." Hugo van Wadenoyen Jr., F. R. P. S., of Cardiff, Wales, is the most modern of the British pictorialists, and his "James Whale as *Slaney*, in *Abraham Lincoln*" is one of the best portraits in the Salon.

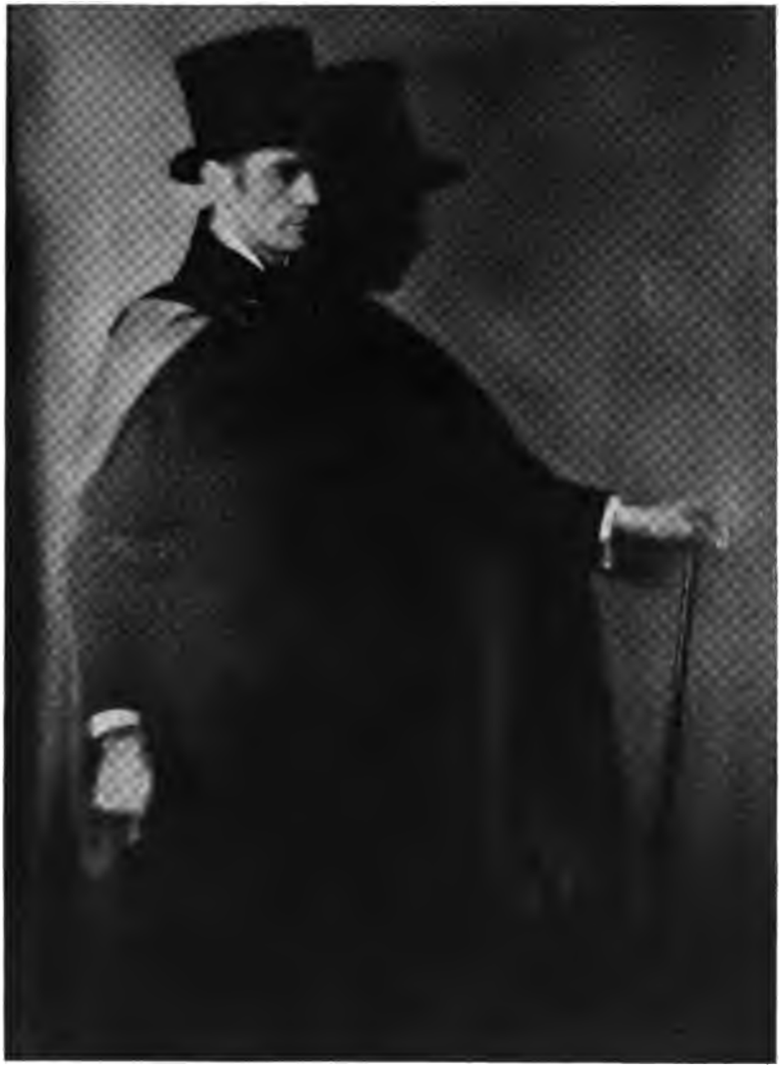
Little glory and much work fall to the lot of the secretary of a salon, and to Henry A. Hussey and his associates on the salon committee are due the hearty thanks of exhibitors and visitors for the capable way in which they have handled the multifarious details of the work, at the sacrifice of much of their spare time. Mr. Hussey is well known as a pictorialist of no mean ability, and his three excellent bromide prints on the salon walls sustain his reputation.

ORTHOCHROMATICS WITH THE ROLL-FILM CAMERA

AUGUST KRUG

LIKE the country cousin who, seeing a giraffe for the first time, declared skeptically, "There ain't no such animal," the experienced photographer may voice his disbelief in any such subject as our title announces: with the best of reasons, it must be admitted, to support such a stand. True orthochromatism, or correct rendering of colors under any conceivable conditions, can only be expected when photographic emulsions sensitive to light of all colors are used in conjunction with suitable ray-filters. In other words, we are prepared to render any and all subjects correctly when our equipment includes panchromatic plates or films, suitable compensating filters, and the ability to use them correctly.

In actual photographic practice, however, limiting ourselves to the range of subjects likely to be encountered and attempted by the majority of users of roll-film cameras, the need for a panchromatic emulsion is seldom felt. The standard roll of film is ideally suited to its purpose. This sensitive material, universal in scope, be it purchased simply as "a roll of a hundred'n'twenty," or known and used with full understanding of its capacities and limitations, is so well adapted for its function that it could scarcely be bettered.



JAMES WHALE AS "SLANEY" IN ABRAHAM LINCOLN
HUGO VAN WADENOYEN, JR., F. R. P. S.
San Francisco Salon

Speed and fool-proofness — these two standards must be met in the manufacture of roll-film. If it can be made orthochromatic into the bargain, without jeopardizing the other two qualities, so much the better. The manufacturers claim that it is orthochromatic. Without denying the claim, we might stop to cite the well-known illustration of the chicken soup in the French restaurant.

This particular rotisserie, you recollect, had its own peculiar method of making chicken soup during the war, when the price of usable fowls soared high. The chef, of an inventive turn of mind, rigged block and tackle over the shining copper soup-boiler, and suspended therefrom, by the feet, a neatly cleaned and plucked six-pounder. Into every batch of consomme thereafter, the chicken would be lowered, via block and fall, for a predetermined period varying from thirty seconds to two minutes, according to the state of preservation of the bird and the degree of richness desired for the soup. This method kept at rest the conscience of the restaurateur, and at the same time the wear and tear on the chicken was not excessive. The chef, it is understood, justified the course on the ground that the chicken was not used to flavor the soup, but merely to christen it.

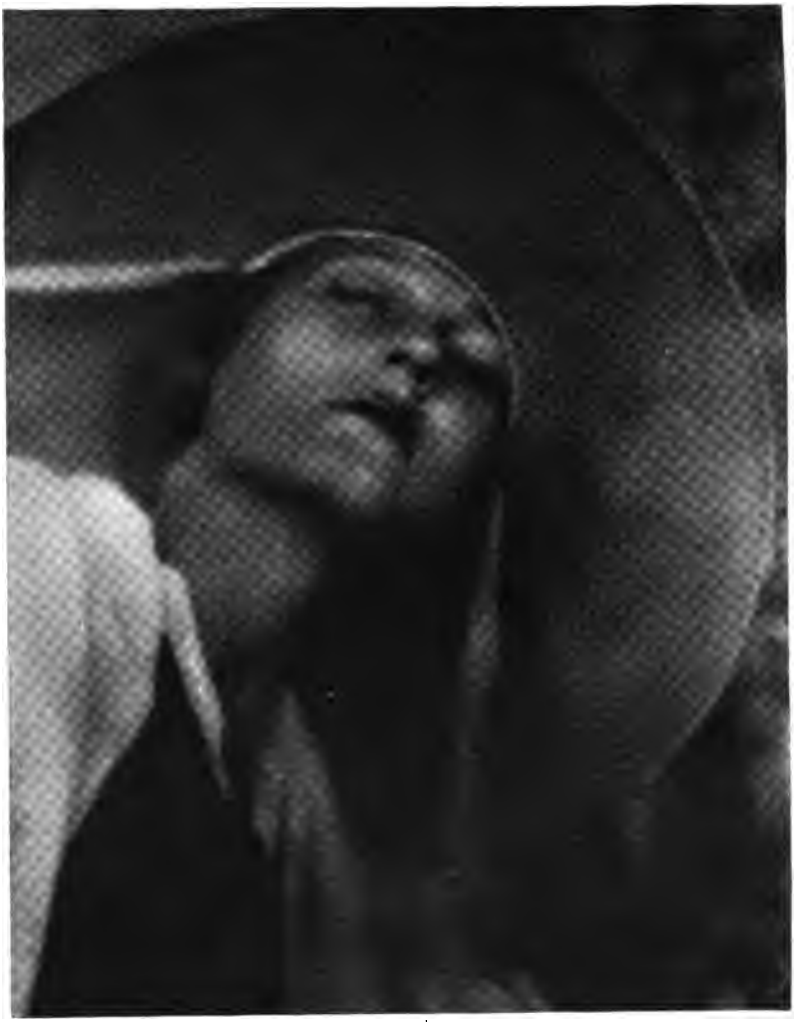
There are, of course, no orthochromatic chickens, which would absolve roll-film makers from any suspicion of employing this method in their factories.

Briefly and seriously, it is impracticable to get speed and orthochromatic quality in the same emulsion One must be sacrificed to obtain the other. With roll film, specifically, orthochromatism gives way to speed. That's all.

Sometimes the film seems to give more correction than at other times: negatives and prints, when compared, give that impression. Inasmuch as elaborate tests of the emulsions during manufacture and coating tend to insure uniformity, it will invariably be found that an apparent difference in orthochromatism can be traced to differences in the subjects pictured, or in the lighting conditions governing them. The standard roll film has the major portion of its sensitivity in the blue and violet region of the spectrum, is slightly sensitive to yellow and green (much less so than plates of the Iso, L Ortho and Orthonon type) and not at all responsive to red. It has two or three times the speed of the color sensitive plates mentioned.

We have discussed the sensitive material thus lengthily for the reason that upon it, after all, rests the responsibility for orthochromatic results. A leather casket of filters, orange, green, blue, and what-not, is a very imposing sight and a most satisfying possession, a ray-screen in place on the camera-front is a mysterious affair to the uninitiated: yet all the filters avail not if the proper sensitive material is not used with them. With the roll-film camera we are limited to one type of emulsion—the roll film. (Let no quibbler beg the question by purchasing a plate-back and panchromatic plates.) This being so, we are compelled, instead of adjusting our filters and sensitive material to the subject and its attendant lighting conditions, to select such subjects and lighting conditions as will lend themselves to rendition with the filter we perforce must use with our sensitive material. This seems to me to be the very nub of the whole problem: the preceding sentence will bear re-reading. Subjects which meet the requirements are not difficult to locate or to describe. Before doing so, let us analyze the typical "orthochromatic" photograph made on roll-film through a ray-filter.

Almost invariably, the desire to differentiate white clouds from blue sky is the motivating influence to the employment of the ray-filter. The customary line of reasoning follows: blue as a color ordinarily photographs too light; a ray-filter corrects this tendency; ergo, a ray filter will give us white clouds sharply outlined against a darker background. For a scientist-photographer whose sole aim is to record meteorological peculiarities of the



DOLORES

George Henry High

San Francisco Salon

skies, using a roll film camera for the purpose, this line of reasoning is sound and sufficient.

Ninety-nine of every hundred photographers who use roll-film cameras, however, desire more than just a record of clouds floating in a dark, forbidding sky: they want, whether they have thought about the matter or not, a pleasing pictorial transcript of the scene of which the clouds form a part. To be truly pleasing, truly pictorial, the entire photograph should bear in all of its tones, from dark to light, a recognizable resemblance to the counterparts in Nature which the tones represent. This truth is not usually considered by those using ray-filters with roll-film: the general conditions, to them, are satisfied if the clouds are plainly visible, regardless of the appearance of the foreground and other less brilliantly illuminated portions of the scene. To the undiscerning, moreover, the cloud rendering seems to be actually improved if nearby trees, rocks and foliage are reduced to inky silhouettes in the print, whereas the photographer knows, or should know, that these are signs of underexposure, and further that a good sky is no excuse for an underexposed plate, particularly when correct exposure would have secured the sky just the same, together with all the rest of the scene.

The use of the ray-filter, it must be admitted, automatically extends the range of tones which the film is called upon to render. To illustrate this statement, consider what is done in marine photography. A filter is used to "get contrast." Without the filter, results would be flat and lifeless: with the filter, the scale of gradations is extended somewhat, for reasons to be discussed later, but it still comes well within the limits of the film's capacity of reproduction. The average well-lit marine view, however, is without heavy shadows or nearby dark objects, and we can confine ourselves to getting gradations in the lights. Thus for orthochromatics with the roll-film camera, marines come close to being ideal subjects. The conditions are reversed in landscape work. We already have, under some lights, a range of tones to make any emulsion hustle; when the ray-filter is slipped over the lens, the range is immediately extended, as has been explained, and the dark parts become darker, in effect, and the light parts lighter, or more nearly as they appear to the eye. This makes correct exposure more necessary than ever if even a reasonable approximation to truth of tone is wanted. The obstacles to correct exposure with roll-film cameras, moreover, are only two in number and sufficiently obvious; pointing them out may, however, induce some worker to make the few improvements needed to effect marked improvement in his prints.

The first obstacle lies in the use of an improper light-filter. Inasmuch as our roll of film is only slightly orthochromatic at best, there can be no advantage in using a deep yellow filter. As a matter of fact, the only reason for using a filter at all is to cut out the last vestige of ultra-violet light and a small portion of the blue. This is what increases contrast: the violet and ultra-violet waves produce the haze which photographs as a white, semi-transparent curtain, and which exercises, naturally, a flattening effect. When this screen or curtain is eliminated by the use of a ray-filter the flattening can no longer exist, and the film is called upon to reproduce the full scale of tones as they appear to the eye. It is apparent that the lightest filter which will cut out the unwanted rays is the logical one to use: a darker one not only presents no advantage, but is a hindrance owing to the extremely long exposures necessitated by its use. The dark filters actually give no more correction than the lighter ones, owing to the inability of the emulsion of the film to benefit by the screening.

As good a filter as can be obtained for our purpose is the Wratten & Wainwright K-1 yellow screen, manufactured by the Eastman Kodak Company. With this in place, the exposure is to be increased from four to six times over normal unscreened exposure, ac-

THE LONDON PAVILION—NIGHT FRED JUDGE, F. R. P. S.

San Francisco Salon

cording to subject. This is a liberal allowance — passable results are secured when it is used as a 3X screen. Open views particularly take the smaller factor.

Under the head of open views may be included marine subjects (which in full sunlight require the least exposure), mountain vistas, and panorams or distant views on flat or marshy land), — in short anything made with the lens focused on twenty-five feet or more, with no dark objects nearer than the middle distance. It is rarely, however, that the photographer will deem pictures without interest in the foreground worth the making. This applies particularly to the pictorialist. The interest may be a tree or group of trees, it may be a clump of foliage or a black pile of rocks — perhaps merely a shadowed patch of grass — yet to make the photograph intelligible and successful the foreground objects must be definitely rendered. Textural quality and truth of tone may depend on additional exposure to the trifling extent of the tenth of a second; a full set of gradations in the foreground shadows cannot be expected if the film is undertimed. Here as elsewhere judgment can be exercised. If the foreground is strongly illuminated, say with the sun at the back of the operator, and the whole scene appears flatly lighted to the eye, the exposure required will naturally be less than that given to the same subject illuminated from the side or from a little in front, when heavy shadows would be present.

While on the subject of ray-filters, a few words on the so-called sky-filters might be apropos. This familiar accessory, a half-screen of yellow blending into clear glass, is widely sold as a sort of no-times filter, a method of getting clouds without additional exposure. This it will undoubtedly do, if used solely for subjects which have been listed above as open views, But, even in this type of subject, if no additional exposure is allowed,

ON THE WAYS N. P. MOERDYKE

San Francisco Salon

the top of the photograph will be unnaturally dark and pictorially topheavy. The sky-screen is altogether unsuited for views having dark objects in which detail is required encroaching on the sky or filtered area, which is arbitrarily fixed at about one-half the picture space. The same influence which counteracts the excessive brightness of the sky, enabling it to register with an approach to correctness, also operates to cut down the time which branches, tree-trunks, house roofs, telegraph poles, etc., require to impress themselves properly on the film. The sky filter will not work properly without an increase in exposure: it will not work properly with any save a limited range of subjects: it will do nothing that can not be done better with the K-1 filter which has been recommended.

The purely mechanical side of the filter question is a matter of personal preference. Assuming the use of a K-1 screen, it may be had as thin gelatine film, or the film may be mounted between square glasses, which in turn may be rounded off and mounted in metal cells to slip on before or behind the lens. If the glass mounted type is chosen, which many people prefer because the filter can be cleaned and is easier to handle, the camera should be adjusted for focus, as the thickness of the glass can and does introduce a change in the focus

THE OPEN GATE P. DOUGLAS ANDERSON
San Francisco Salon

of the lens used. With short focus lenses and the thick glasses used for mounting, this change may be enough to affect the definition very materially.

As good a way as any is to use the gelatine film filter between the combinations of the lens. To cut the filter without damage, fold a piece of tissue or tracing paper, and lay the film in the fold. Take out the lens combination which comes nearest the iris diaphragm, and press it on the tissue paper to get the size of the circle you will have to cut. Then with a sharp pair of shears, or preferably cuticle scissors, cut film and paper covering into the required shape. The film is next grasped with tweezers and dropped into place on top of the diaphragm, and when the lens combination has been screwed back into the shutter the camera is ready for use. At a diaphragm opening of *f*:8 there is no perceptible difference in sharpness when the gelatine film filter is used in this way However, the presence of the filter must not be forgotten when the camera is taken out for picture-making: although the filter is unobtrusive and unnoticeable (out of sight, out of mind) if allowance is not made for it in exposure the pictorial record of an entire holiday may be lost. Such things have been known to happen.

The mechanical limitations of a great many roll-film cameras are responsible, in a way, for underexposed film when the ray-screen is used. This is the second obstacle to perfect results. A camera equipped with an *f*:4.5 anastigmat and a shutter having speeds of one second and upward is the ideal for this kind of work: speed in the lens is not as essential as a good workable range of slow speeds on the shutter. Speeds one-half, one-fifth, one-tenth and one-twenty-fifth of a second are those most generally used with the screen. It is only rarely, and with extremely well-lit open views, that faster exposures can be given. Parenthetically, it is nearly always preferable to stop down the lens the required amount rather than speed up the shutter, particularly with landscapes and scenes in which no moving objects are included near the lens. Greater depth and uniformity of definition will thus result: to my mind the only use of speeds higher than one-twenty-fifth of a second is to stop motion for news and record work.

The worker should have no trouble in giving the longer automatic exposures, up to one-fifth of a second, without traces of movement of the camera spoiling definition of the resulting negative. It will be found that there is less risk of movement when the finger release provided on the shutter is used to make the exposure than when a cable release or bulb and tube is employed. The release should work very easily — it should be hair trigger if possible. Setting shutters go off more easily than the automatic type, and although the setting is tiresome at first, shutters of this kind are to be preferred to the automatic ones. A most fruitful cause of camera-movement is the jab at a refractory finger-release. For photographing ordinary views and everything except near objects within a couple of feet of the ground, the camera should be held at eye-level. If this position seems awkward at first, remember that holding the camera at waist-level was inconvenient in the beginning, and that the better viewpoint will compensate in time for the inevitable films which do not quite come up to expectations in amount of view included. Practice in the eye-sighting method will soon enable the photographer to take snap shots without consulting the finder — an invaluable accomplishment when a great deal of work must be done in a short time. Practice, too, with an empty camera will do wonders toward perfecting technique in the apparently simple job of snapping the picture. People will persist in attributing poor pictures to inaccurate focusing, when they are manifestly the result of camera motion: beginners in particular regard the former defect as the lesser of two evils.

With a great many cameras, the shutters have no speeds slower than a twenty-fifth of a second. If the owner of such an instrument sticks rigidly to the marine or open-view subject and the widest opening of the lens usually fitted to a camera of that type, he will have as fair a percentage of good results as his better-equipped co-worker. If, however, he is anxious to do all sorts and descriptions of landscapes, he will need another convenient little accessory, altogether too uncommon among the generality of hand-roll-film camera wielders. Usually known as a tripod, this contrivance nowadays takes so many different forms that it is better perhaps to speak of it as a camera-stand. There are the numerous devices for holding the camera to something solid and stationary, either by clamping it or chaining it: there are the hybrid walking stick tripods: there are the old-fashioned wooden-legged stands, and the new-fangled metal tripods which do everything except make the exposure, and you can buy a contraption to do that for you. Take your pick. For reliability and rigidity the old-time tripod will never be excelled: where lightness and convenience count, the others mentioned will more than satisfy, particularly with the smaller sizes of cameras.

Exposures longer than a fifth of a second require a rigid support for the camera. The iron-nerved photographer may occasionally give half a second without a tripod,

NATURE STUDY L. A. MORSE

First Prize, July Senior Competition

holding the camera in the hand, yet this is possible only when he is resting against something solid and supports the camera on his knee or other natural pedestal. While it is handy to have a tripod or a substitute for one along, the opportunity for a picture need not be passed by because of their lack. Cameras which automatically give second and half-second exposures need only to be pressed against a tree or post to give rigidity, if no handier support is available. With care, bulb exposures may also be made under such conditions.

Summer exposures with the K-1 screen will be found to run almost uniformly as follows, assuming the use of Eastman N. C. film:

(a) Marine views, blazing sun on water or beach, stop *f*:16, to *f*:22, no dark near objects, 1-25th sec.

(b) Marine views, hazy sun, *f*:11, 1-25th sec.

(c) Distant cloud- or mountain-scapes, *f*:11, 1-25th sec.

(d) Open landscape, trees in middle distance, light foreground, stop *f*:8, 1-25th sec.

(e) The same, with dark foreground, stop *f*:8, 1-10th sec.

(f) Wood interiors, partially sunlit, stop *f*:8, 1-5th to 1 sec. or more.

(g) Average sun-lit street-scene, *f*:8, 1-10th sec.

(h) Average sunlit architectural subject, medium tone, *f*:11, 1-5th to 1-10th sec.

I have made photographs under the above conditions with technically good negatives resulting. They are the "mental photographs" I have made and by which I immediately can compare any subject which presents itself, with the object of determining the exposure. I do not know whether an exposure meter would indicate these exposures I have given as sufficient or insufficient: with my camera they give me the results I am after, and they will serve as a basis for experiment.

There is no doubt but what a color filter, intelligently selected and used, will improve the results to be obtained with a roll-film camera on certain subjects. There is equally no doubt but that the method is severely restricted and hedged about with limitations, so much so that the worker seriously interested in orthochromatics is advised to employ a camera more pliable and amenable to his wishes. Yet the roll-film camera will always enjoy its present popularity on account of its convenience for tourists and even for earnest photographic workers on occasions when the photographic side is not the predominant one. To be able to use the instrument with certainty, precision and efficiency under any circumstances, even when an attempt at orthochromatism is indicated, should be the aim of every possessor of a roll-film camera.

LIVING WITH A NEGATIVE HOUND

ELSIE B. ROEMER

PARODYING BRET HARTE:

"—— for ways that are dark
And for tricks that are vain,
The negative hound is peculiar."

Particularly the tricks that are vain. It may be all right, in theory, for everyone to have a hobby, but I "rise to remark" that sometimes one hobby is all that a single household can stand.

Our household hobby is photography. It isn't mine. Oh, no. I used to think before I married Friend Husband that it would be lots of fun making pictures together. As a matter of fact, I got scared out of it. I'm afraid to touch those precious cameras for fear of breaking something; the technical knowledge R. Q. possesses inspires awe, not ambition; I'd offer to assist in the developing if I weren't afraid that I would overtime or undertime or do some equally dreadful thing.

Then I like prints while Friend Husband likes negatives. One might think the two would work together. I could do the printing from R. Q.'s negatives. As a matter of fact I'm scared there, too. I'm afraid of getting finger marks on the negatives.

In the years we have been married — we're now in our fourth — I have secretly nourished a hankering to have my picture taken. It has been recorded on film or plate perhaps a dozen times in the three years. R. Q. prefers landscapes or technical subjects. People just serve to litter up the negative. Of those dozen exposures three have been brought to completion. One was poor (poor subject). The other two were autochrome and the negative is the picture.

Two years ago we made our first visit to Lake Tahoe and found some wonderful views. We took some pictures, too. They turned out well, but I've never seen a print. The following year we camped at Fallen Leaf Lake and there again took pictures. We packed

DON

WALTER RUTHERFORD

Third Prize, July Senior Competition

about thirty pounds of photographic equipment including a developing outfit. We just couldn't wait till we got home to see the negatives. They were good, too, but we have no prints yet. This year's pictures are good, too. At least the negatives are.

The real trouble, of course, is lack of room and time: Unfortunately (for the hobby) R. Q. is a working man and has only evenings and Sundays for his devotions at the photographic shrine. Sometimes I insist on his going out on Sundays. How can I expect prints if I won't let him work? As for room, I retire to the other end of the house and let him have the kitchen to himself, but he does have to clear things away. Many precious minutes might be saved if he had a room of his very own properly equipped with light, sink, etc. It's such a nuisance to have to put things away. Even a half dozen shelves which no one ever touches cannot compensate. And of course putting things away takes time which might be given to printing.

There's so much you can do with a negative. You can reduce it and take something out, chemically, or you can intensify it and put something in. Sometimes you can both intensify and reduce and produce wonderful results. You can study its composition and opaque all but a desirable portion. You can retouch it and take out what ought not to be there and put in what ought to be.

Then you can file away your negatives in neatly labeled envelopes with all sorts of exposure records. And last (but certainly not least!) you can take them out from time to time and admire them, though others see little in them.

Negatives are such a source of inspiration. The picture isn't just the right size; you must have a larger camera. The shutter hasn't been working just right for the last few pictures. You can get another. The sky is too bright in this picture. Solution — ray filters. You buy them. And while buying them you see a wonderful bargain in a lens. You really should take advantage of it. All right, it's yours. You really should have an enlargement from that negative. You could get much better PRINTS if you had an enlarging outfit. Of course you get it. It has been on the shelf for over a year, but so far there are no prints.

And while acquiring the cameras, lenses, shutters, and so forth, you also acquire a miscellaneous assortment of kodapods, wait-a-minutes, developing tanks and trays, photographic magazines, filing equipment, and enough chemicals to supply a laboratory. Incidentally, the six shelves are no longer big enough to store all this so you build some more. And to build them you have to buy more tools. It's a great life.

For about a month preceding last Christmas R. Q. had not talked about any new photographic desire, and I was deceived into thinking that at last he had everything he wished. One evening we met a young man whose acquaintance we had made in the photographic department of a certain store. Just for fun I asked, "You haven't any bargains in cameras, have you?"

That was a tactical error. Of course he had. A dandy. Very cheap. Excellent condition. Most desirable. Of course R. Q. wanted it. I told him he couldn't have it. That was enough. The last word at night, the first in the morning, the answer to every question was the name of that camera. I resisted for some time, but it was Christmas, the time when one hates to disappoint the children. On December 24th I went down and left a check in exchange for the camera.

I wish you could have seen him open his packages. For a couple of minutes at least he looked at the camera package and made no move to open it. I thought he was overwhelmed by my kindness to him. Not so. He very properly proclaimed his joy and then the next day announced that he didn't want that camera and never had, was only teas-

A MEETING J. ITO

Second Prize, July Senior Competition

ing me in saying he did. Would I please take it back? I would not. He did. He didn't want that camera, but he wants another. He hasn't bought it yet.

The one consolation I have is that I hold the purse strings in our family. When we were married R. Q. endowed me with his worldly goods in fact as well as in the ceremony. I was to be the banker so that it would be my fault if we died poor. It was a good thing, too. With me as the banker we have a tiny chance of saving enough money to buy some oil stock, but with R. Q. as the banker we'd certainly have nothing to leave but negatives and the wherewithal to produce them.

NICKOLAS MURAY

JOHN WALLACE GILLIES

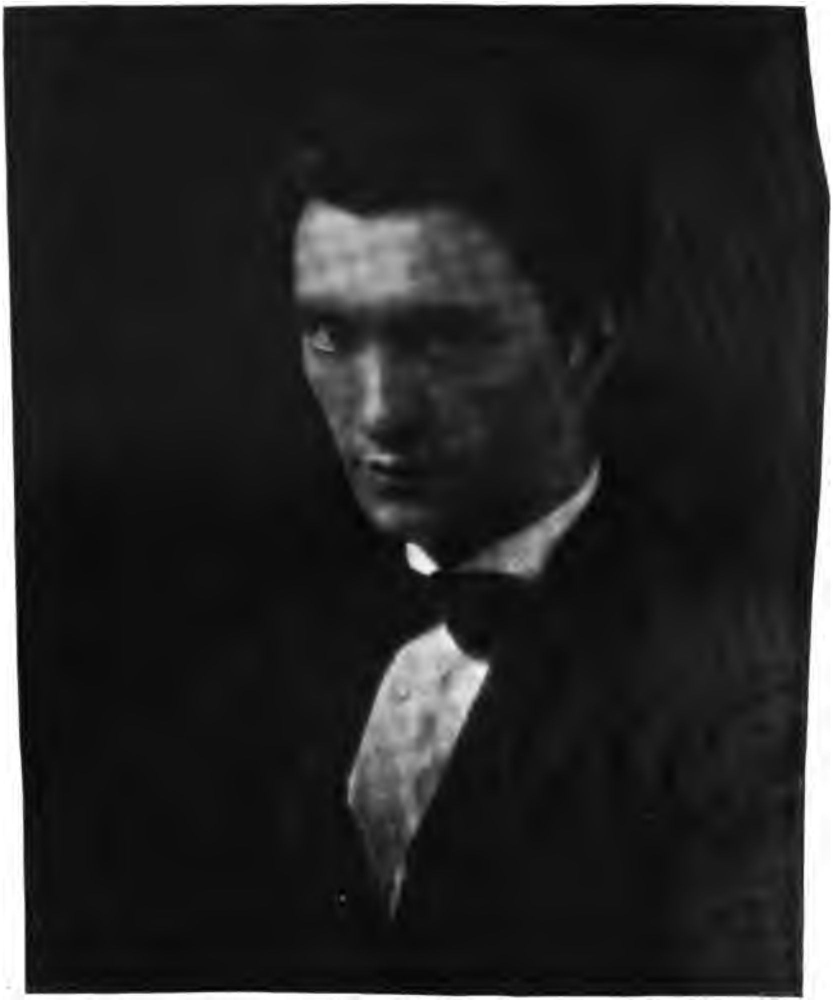
The way he says it is "Mco-rai" if you can gather from that how it is said. I can't. but it is the nearest I can come to it in our very limited English language. The language is limited you will have to admit; have you not at one special time of your life, desired to express extreme dissatisfaction with things or perhaps some person, and found that you could command no words which would adequately express the idea? That is how I feel about trying to tell you how to say "Muray" right now, except that I am not trying to cuss the gentleman and have for him only the very highest esteem and affection.

Muray is of Hungarian origin, from the land of Liszt so to speak, which may in some sense account for his sense of composition and decorative values. While he is quite a wizard at composition, he is no slouch in technique, as many of our very famous pictorialists are. He has spent 15 years at photo-engraving, where as you might know, a very fine photographic technique can be developed — in fact unless the technical work is right in this branch, the man had better go get himself a shovel and begin all over again at some work which he really can do. This is presuming that any man can operate a shovel, which I am advised by the Editor is a broad statement. Anyway, he spent 15 years in photo-engraving, and then got the idea he could make portraits. The idea struck him about four years ago, and his course after that has been very regular and rising all the time, until he is recognized by those who know, as one of the best of the new school of pictorial portraitists. In saying this, it is well to comment that a new school for portraiture is developing, in which pictorial effect has a great deal to do with the value of the portrait, and it is fair to presume that in a few years a photographer will have to get busy for himself and turn out work which is pictorial, as well as technically good; something which will carry photography a bit beyond the educated plumber stage which it has enjoyed for so many years, and earned photographers the kindly name of, "well dressed tramps."

Friend Muray is beyond all this. He is really an artist in his viewpoint of things, and he happens to work with the camera. This is a good thing for photography, for if all the Murays chose to paint, as I believe they very well could, photography would have no nice picturesque characters in it, and the gang would still be rated along with the plumbers and the other highbinders who charge two dollars an hour for not working, except that a photographer never got that much. If you started to say "artist" to Muray, he might challenge you to a duel; he's likely to do this little thing, as he fences very well, I am told; I have seen him fence, but I had to be told it was "very well," as I did not know anything about it. He does not think of art at all; he just does it, and if you like the pictures, all very well; and if you do not, he is very sorry, and nice about it, and perhaps makes another sitting. If you get fresh he might stick one of his eight or ten foils or broadswords into your pantry; I'd hate to get him riled. He is a nice guy just the same.

As I have intimated he does portraiture of a very pictorial nature. He has a partner, who is chauffeur of the cash register, and has nothing to do with photography. Muray therefore has all his time to take care of photographic matters, and does not have to tell a customer apologetically that he wants the sub-treasury for making a dozen pictures; the partner has to do that.

He also has ideas about photography like all the rest of us, and they are quite different from those of anybody else, which also is quite usual. Different and usual. He



NICKOLAS MURAY

JOHN WALLACE GILLIES

likes action in a picture; he uses pyro to develop his negatives, and his fingers look like hell; his technique is sound and he can get a good negative every time under difficult conditions, which is rare in a man who has the artistic viewpoint. He likes his pictures soft but never fuzzy; I do not know what lense he uses, but since it is not a — (you have one guess on how to fill this space) I will pass this aside as unimportant, and when he uses one of our lenses, I will write paragraphs about it.

So much for Nickolas Muray. He is one fine photographer, and his phiz is hereby shown.

A POCKET CASE FOR CAMERA ATTACHMENTS

MERWIN EBERLE

EVERY amateur enthusiast who wishes to do other than mere snapshot work, and also every professional photographer who sometimes works with a portable camera outside his studio, soon realizes the necessity for a compact pocket case for camera attachments. Though even if such a case were made by photographic manufacturing companies — and I was unable to find one — it probably would not suit all individual requirements; for to be convenient, it should be as small as possible and yet carry everything that the artist is likely to need.

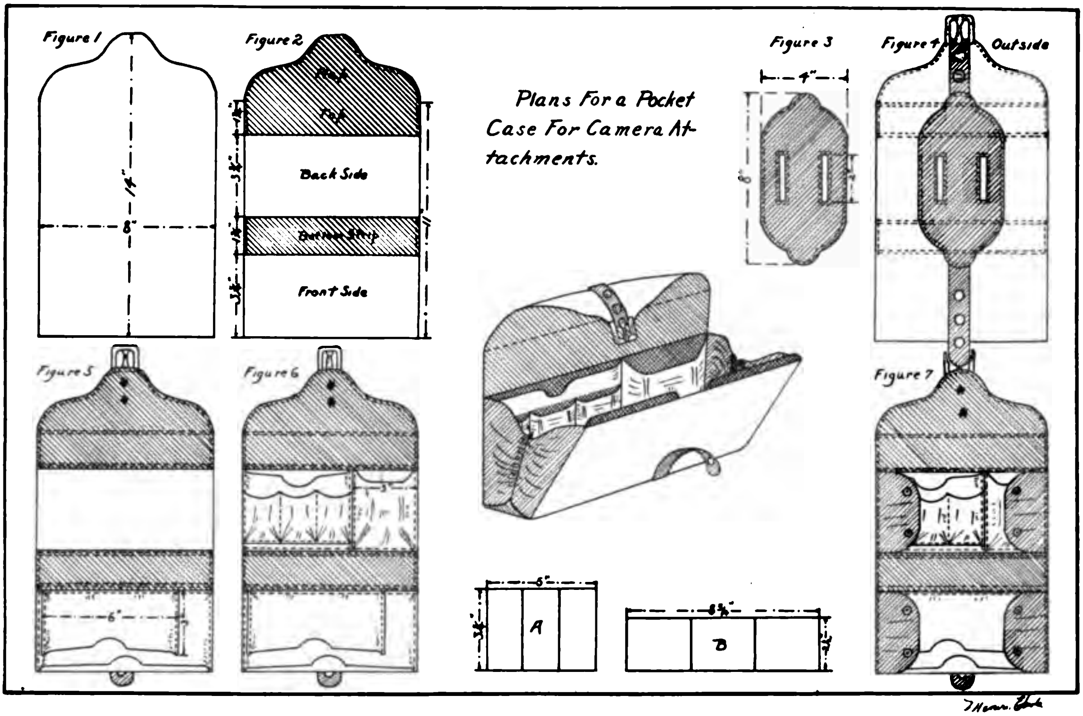
Any sensible person will admit that it is the essence of folly to carry delicate supplementary lenses, and perhaps a ground-glass focal plane, plate holders, kodapod, and exposure meter shifting around loosely in a coat or a trouser pocket, yet many of us have done that very thing. Yet of all the professions, it is generally conceded that photography graduates, whether from college or from the school of experience, are the most resourceful class of people.

I had long thought that sometime I would work out a hazy plan that had been hibernating with me for a compact case for my camera attachments; then suddenly, vital necessity forced the issue — I was to spend my summer in the wilds of the Rockies, so far from the reach of civilization that if any of my camera adjuncts were lost or broken they could not be soon replaced.

So forth I prowled in the attic and dug out an old-fashioned, soft-leather legging, which was lined with flexible kid, and after I had ripped it apart, I borrowed the family sewing-machine for a couple of hours one evening.

Collecting my camera accessories, I arranged them snugly into two piles, two layers to each pile. Both piles were made to measure alike, for they were to form the front and the back sides of the case, and each was 3¾ x 8 inches. I figured that 3 inches would be a suitable width for an outside flap; and 1¾ inches was ample allowance for expansion of the top and the bottom of the case. Therefore, the outer covering was cut 8 inches wide and 14 inches long to the rounded tip of the outside flap. (Figure 1).

As the leather was very flexible, I next cut a strip 1¾ x 8 inches to line the bottom of the case, so as to give it more body and a better finish. Measuring 3¾ inches up each side of the case from the lower edge, which part was to be the front side, I placed the lining above it and stitched it to the covering at the narrow ends only to hold it in place. Then just above this 1¾ inch strip I allowed another 3¾ inches for the back side of the case,



Plans For a Pocket Case For Camera Attachments.

then cut a lining to fit the top and the flap all in one piece. This I also stitched in place on the outer edge of the case only (Fig. 2).

Next I cut a doubled piece of leather in oblong pattern 8 x 4 inches to serve as an outside fastener, and into this two 2 inch belt slots were made (Fig. 3). After stitching this doubled piece together around the outer edge and along each slot to strengthen them, I fastened it to the outside of the cover by four double rows of stitching, which stretched entirely across the part that was intended to serve as the top and the bottom of the case. This stitching also permanently secured the lining on the under side.

Two narrow, short straps were caught in this stitching at each end of the fastener strip. A small buckle was clinched to the end of the upper strap by two harness rivets which also pierced the front flap. In the narrow strap at the lower end, several small holes were punched, and the outside of the case was finished (Fig. 4).

Now I could plan for the inside compartments. The front side of the case was logically the place for the unbreakable adjuncts, while the delicate pieces should be pigeon-holed on the back side for greater security. As everyone knows, mortals are ever prone to follow the line of least resistance in their activities, so I, likewise, trailed along with the great majority and made the easiest side first.

For the note-book, a piece of leather 3 x 6 inches would make a pocket that would give enough slack to allow the book to slip easily in and out of its compartment. Another piece of leather 3¾ x 8 inches would likewise accommodate the exposure meter. The smaller piece was stitched to the larger one on three sides. This double piece, which was just the size of the front side of the case, was then stitched to it on three sides, leaving the two pocket openings at the lower edge. Thumb-holes were cut out of each pocket top; and, presto! the front-side compartments of the case were finished (Fig. 5).

A piece of leather 3¾ x 5 inches would allow the ground-glass focal plane to slide

THE DANCER A. F. MURPHY

easily in and out of its pocket. The 5 inch sides of this piece were marked off into three divisions (a). Another strip 2½ x 8¾ inches was also marked off into three divisions (b). This long and narrow strip was stitched to the broader piece at the ends, and the marks of the corresponding divisions were also laid together and stitched. The extra fullness of the upper strip was caught up into what we have often heard ladies speak of as a "box-plaited effect," then stitched down on the lower edge.

It was a simple matter to persuade the madam of the household to sew a small dressmaker's snap fastener at the top of each of these three tiny pockets, so that the supplementary lenses could be safely housed — and, by the way, the size of these lenses is No. 6. This double piece was then stitched on three sides to the back side of the case, the pocket openings facing the top and outer flap; but care had to be exercised not to catch up the outside fastener in the stitching on one side. There was just room enough left on

MRS. E. A GOFF AND BABY — A. F. MURPHY

the right hand side for the kodapod. A piece of leather 4 x 3¾ inches, box-plaited on the lower edge and stitched on three sides to the case, made a convenient compartment for it. (Fig. 6).

Four pieces of leather 3¾ x 2 inches were cut with rounded corners on one long side of each piece. These were stitched on the front and the back sides of the case along the sides, so that their natural position would be inward (Fig. 7).

Snap-fasteners were sewed on the rounded corners of these flaps and when the case is folded up and the opposite corresponding snaps fastened, an inner compartment is formed that can accommodate half a dozen plate-holders or a couple of extra film packs. By such as arrangement, when it is more convenient, one can enjoy the advantage of spreading the case out flat.

This pocket case for my outfit has since repaid me for the thought and the time spent in making it many times over. It goes with me whenever the camera goes and has never proved burdensome. With my small camera hung on my belt on one side, and this case with accessories on the other side, I have scrambled over jagged boulders and gained heights and positions with so much effort that a coat on my back would have been an encumbrance.

By using the general outline of the plan, anyone can easily change the dimensions of the case and the arrangement of the inner compartments to fit his own special requirements, but the case should not be made so large that it will not slip into a coat or an overcoat pocket. For instance, if he has four supplementary lenses of a size larger than mine, he can arrange to put two on the back side of the case where I have pictured my three, and two more on the front side of the case on the front of the note-book pocket. A letter or a number should be inked or stenciled on each lens pocket to designate it.

It is not essential that the material used be leather. A good imitation will make a handsome case. Ofttimes an upholsterer can furnish scraps in two colors—tan for the outer cover and the inside compartments, and a darker shade, or black, or dark brown for the lining, the four little flaps at the sides, and the outside fastener; or vice versa. Pantasote, used in automobile wheel and body repair and paint shops for auto tops and side curtains, is also excellent material to use. Paper patterns for the case should first be cut, and thus the actual amount of material needed can be ascertained.

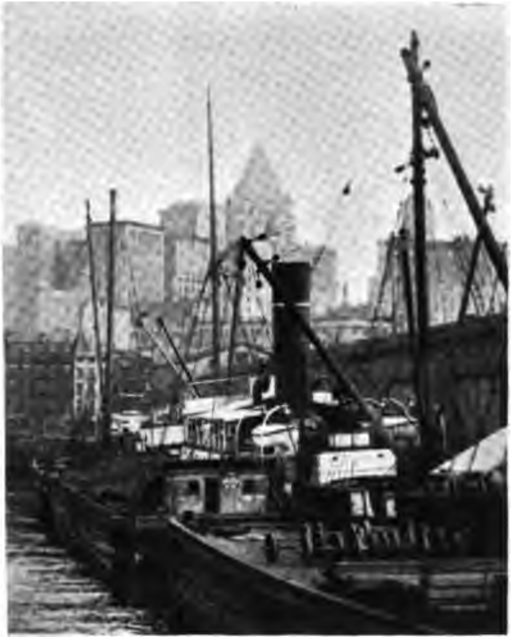
But however one plans for it, by having a case of this kind the camera attachments are kept together, and they are always at hand when necessity for their use arises.

WHARF AND HARBOR SUBJECTS

WILLIAM S. DAVIS

CAMERA owners who reside in, or near, a port of any kind need never lack for pictorial subjects whatever the time of year, but those who only have access to water scenes during the summer vacation period may take some satisfaction in the fact that most harbor and waterfront material can be photographed at least as well then as at any time, to say nothing of working conditions being then most agreeable.

One who essays the production of artistic compositions in this field can find both quantity and abundant variety of subject matter, which, added to the infinite changes in grouping and atmospheric effects, insures continued interest for those who perceive the possibilities afforded, but often calls for quick decision to size up the merits of a rapidly shifting combination and grasp the psychological instant for recording the effect. Much desirable subject matter is, of course, found under conditions which allow of leisurely consideration, a ramble on a quiet day around the wharves of a city or small fishing village being practically certain to reveal plenty of such material. It may be a fishing smack with loosened sails drying in the sunshine; rippling "corkscrew" reflections of masts, sails, and piles, wavering as the surface of the water is gently stirred by the tide; some larger craft just in from the sea and discharging cargo; a picturesque coaster riding at anchor near shore; or a view from a vessel or the outer end of a pier looking shoreward, with the buildings along the waterfront for a background for whatever shipping constitutes the foreground feature. One



AT A NEW YORK PIER Wm. S. Davis

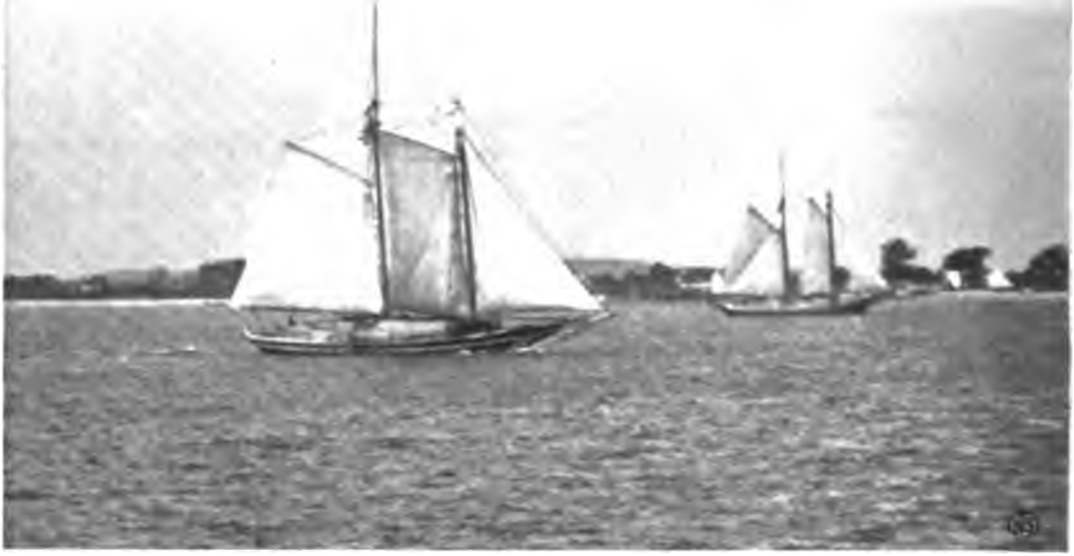
DRYING THE SAIL Wm. S. Davis

example of the latter class is shown in the illustration "At a New York Pier," which was taken from the deck of a steamer lying at the end of an adjacent pier, the aerial perspective being improved by the morning haze present when the exposure was made. Attractive vista compositions are also frequently found by looking out of a slip from the shore bulkhead, the long freight sheds on the piers framing in such shipping as may be in the slip; as vessels come and go the character of the material is frequently changed.

The end of a wharf usually affords a very good vantage point from which passing craft may be photographed, as well as those arriving or departing, and the various ferry lines around the larger ports also afford opportunities for making studies afloat.

The state of the weather plays a very important part in the character of a marine subject, but among such diverse aspects as those occasioned by fog, calms, crisp sparkling sunshine with deep blue sky, clouds scudding before a smart breeze, the golden haze of late afternoon, and a striking sunset sky, it is impossible to choose one as *the best*, for each is effective if adapted to the character of the composition in hand.

Clouds are usually a welcome addition to open marine views, as they can be used to balance the lines and tone masses of other portions, besides helping to express the feeling of such motives as strong wind, a quiet evening, etc., but it is true that there are times when their presence is unnecessary, or even detrimental, as in some foreground studies wherein the material cuts the limited sky space visible into interesting shaped areas, which are better composed of flat tones. There are, of course, no rules in a matter of this kind which can be implicitly followed, for one's good taste must be depended upon to tell when the ensemble looks right, but it is useful to know what influence various things may have upon the general effect as a means of determining what factor is wrong when the effect is not satisfactory. The illustration of a schooner at anchor, called "Near Evening," for



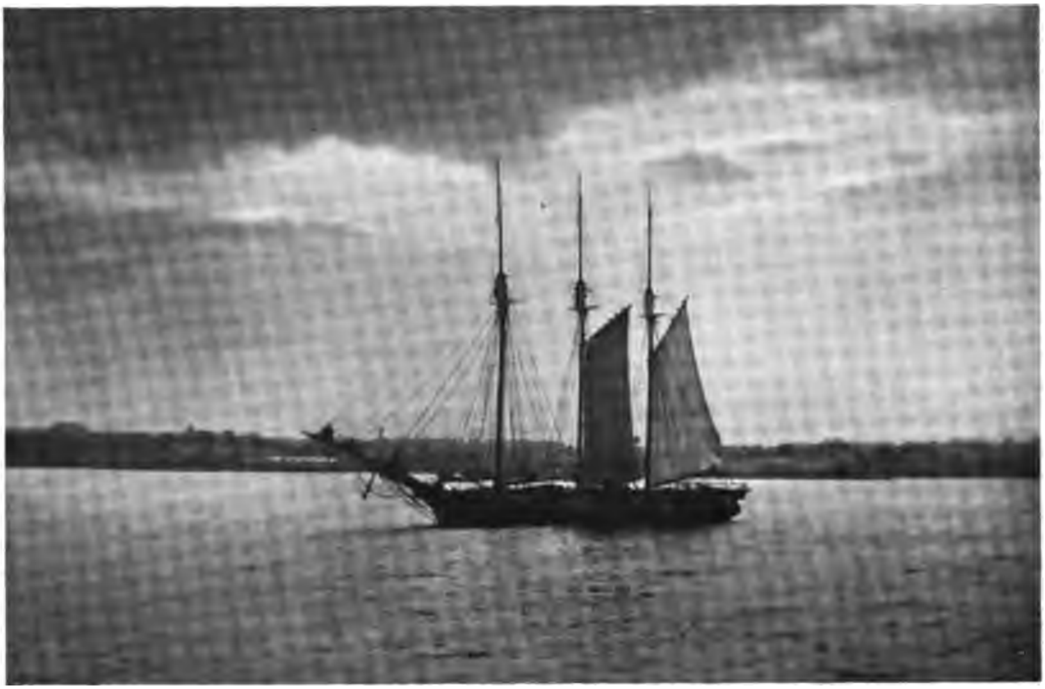
OFF TO OTHER PORTS — WM. S. DAVIS

example, needed the cloudy sky to express the sentiment of the title and balance the tones in the water and the dark mass of the vessel, while another open subject might be well balanced in gradation and tone-spotting without clouds.

To achieve tonal harmony there must be an adequate amount of gradation, or steps of tone, between the lightest and darkest portions of the picture, though in the disposition of tone-spots it is entirely proper to emphasize the impression of intense illumination by placing contrasting notes in juxtaposition. Unfortunately in the work of beginners and casual snap-shotters it is common to see prints composed wholly of extreme contrasts. Since the quality of marine photographs depends to an unusual degree upon the careful interpretation of tonal effects, the matter of gradation and the "key" in which the finished picture is pitched constitute the most essential elements in the technique. High-keyed renderings of brightly lighted subjects particularly call for nice management to avoid flatness on one hand and the discord caused by a spot of slightly too deep tone on the other, for a false note will easily destroy the feeling of luminous atmosphere which is so characteristic a feature. A shadow which receives any reflected light, or is seen through an appreciable layer of light-filled air, is never quite black. Another thing to remember is that a plain cloudless sky possesses a tone of its own, for which reason it can never be truly represented in a print by an expanse of white paper. "Off to Other Ports" shows a type of subject wherein the tone of a plain sky determines the effect produced, since without the aid of a well defined tint it would be impossible to place the accent of light on the sails of the nearest schooner, where the interest centers.

What has been said about the importance of retaining the tonality of a plain sky applies with equal force to still water, which is usually quite near in tone to the sky.

As a rule it is best to make the exposures when the sun is not more than about forty-



NEAR EVENING — WM. S. DAVIS

five degrees above the horizon, and wonderful lighting effects are often seen when the sun is much lower, near sunrise or sunset, for when comparatively low in the sky there is less danger of getting harsh contrasts, since the quality of illumination is softer, and a larger proportion of graded shadows is present than is commonly found near mid-day.

As regards direction of lighting. The surface of the water, particularly when broken by waves, is shown to the greatest advantage when lighted from one side or in front of the observer. A side lighting is equally effective for showing the swelling expanse of wind filled sails or the contours of a vessel's hull. Subjects which present an attractive outline may be shown *en masse* by working against the light, the result being very striking when a splendid sunset sky furnishes a glowing background for the dark bulk of a vessel or the broken sky-line of buildings along a waterfront, viewed from off-shore. Also beautiful, though less vivid, are the *contre-jour* effects on a sunny morning or afternoon when the air is filled with a luminous haze and the water in the track of the sun sparkles with countless little glinting lights.

The placing of one or more vessels in the picture-space, and the height of viewpoint from which they are seen, have an important bearing upon the result. The principal feature should not occupy the exact center—vertically or horizontally—since it would cut the surroundings into equal divisions, creating a monotonous repetition. If a vessel is far enough away to include all of it the hull had best be somewhat below, and to one side of, the center. Generally speaking it is advisable to have the greater space ahead of the vessel, especially when the latter is shown under way, as this gives a sense of freedom and conveys the impression of moving into, rather than out of, the picture, though sometimes there are exceptions when other factors must be considered A low point of sight above the water brings the horizon nearer the level of the shipping, and this is a help in emphasizing the feeling of height and bulk in the latter. A high horizon-line resulting from a view-point sufficiently elevated to look down upon the subject is a form of treatment best reserved for those scenes containing the point of interest in the foreground, such as small craft or dock.

In composing a picture containing more than one vessel, the interest should be concentrated by making one, or a compact group, the dominant feature. Such a result may be attained by making the nearest or largest vessel the focal point, or attracting attention by special tone emphasis, as when one is silhouetted against the light more than the others. Besides this, the various units should not be so evenly spaced as to suggest mechanical repetition. While in practice it may not be possible to attain perfection in every detail of grouping, the fact that the individual craft in a scene are moving at different speeds or in different directions allows one considerable choice in arrangement by waiting even a few seconds when an effect is not satisfactory, and much the same can be said as to character of lighting, since by following the progress of the shipping as it passes, the angle of illumination is constantly shifting, and even a slight alteration will sometimes greatly affect the play of light and shadow on a sail, or the general tonal relation of a ship's hull to the sky and water.

While all positions are capable of yielding attractive impressions, it is generally conceded that a sailing vessel shows the greatest action viewed at an angle, either when approaching or leaving the spectator, if close hauled. When "running free" before a good breeze the curves of the well filled sails, which afford perhaps the best means of suggesting action, are seen to excellent advantage in a nearly side view. A bow-on view of a large ship from a low point of sight is impressive, but, whatever the position, in the case of a steamer the principal means of suggesting motion are the trail of smoke from the stack, escaping steam, and the foamy bow wave or wake astern.

Seen at close range, a portion of a vessel will often fit into the composition better than the whole, but the cutting off by the margin of the picture should appear such a logical result of the viewpoint as not to attract immediate attention, a matter which can be taken care of by seeing that the focus of interest lies well within these boundaries, together with the avoidance of obtrusive spots of tone close to the margin. Bits around the piers lend themselves well to this type of composition, such as the fishing sloop at a village wharf shown in "Drying the Sail." One thing to be guarded against in such subjects is the exaggeration of perspective resulting from too close a point of sight, which is especially liable to show itself disagreeably in such details as the bowsprit or boom of a craft seen in perspective. This can only be prevented by a more remote standpoint, which, if it includes more material than is wanted, is easily taken care of by utilizing only the central portion of the negative when making prints, or obtaining a larger image on the spot by employing a lens of longer focus than usual.

Reflections are always an attraction on quiet days, the best effects being seen when a slight ripple breaks the mirror-like perfection of the inverted image just enough to overcome exact repetition of the details in the objects reflected. Such reflections make a charming nearby feature, and in many instances introduce just the needful tones to produce a well balanced composition.

About the outfit. If but one camera can be taken along, the kind chosen should be a form easily operated in the hand, since quick manipulation is so often necessary to catch a desirable effect in moving shipping. Around the wharves a camera may often be used most advantageously upon a tripod, to permit of studying the image carefully upon the ground glass. Where a good stationary standpoint is available from which to watch harbor

WHEN SUMMER SKIES ARE BLUE GARNET E. JACQUES

First Prize, July Junior Competition

traffic, passing shipping can also be caught with a tripod camera fitted with a fairly long focus lens, by leveling the instrument and leaving the tripod-screw just loose enough to allow swinging the camera from side to side as the subject changes position. Probably the best all-around type is a long bellows plate camera which may be used either in the hand or on a stand, not exceeding 4 x 5 in size. If fitted with a convertible lens, either R.R. or anastigmat, anything in the marine line a pictorial worker would care to take can be secured. A shutter giving controlled speeds up to 1-100 second will meet requirements. To allow of using the single elements of the lens when the camera is held in the hands (a useful means of securing larger images of distant shipping when a nearer viewpoint is unattainable), special marks should be made on the camera-bed to permit of setting the front at the correct infinity point for the single element without resorting to visual focusing. A removable mask should also be made for the finder which will show the exact amount of subject-matter included when a single component of the lens is used separately. Speaking of finders reminds me, the best for the marine photographer is a good sized direct-vision instrument of the open-frame pattern, as this allows one to see the actual subject, the motion of which can be followed much more easily than that of a very small image in the ordinary reflecting-finder.

The constant employment of a lens shade will remove the most frequent cause of flat foggy negatives, direct sunshine or strong reflected light striking the front surface of the lens. When only the back element of a doublet is in use the lens mounting will serve as a hood.

Better color values of light blue sky and still water, particularly if seen in connection with dark foreground material, will be obtained by placing a ray-filter over the lens; one which lengthens the exposure but three or four times with orthochromatic emulsions is sufficiently strong to give very good correction. A filter is also of value in differentiating between white sails in sunshine and blue sky, though unless the sky is very pale in tint the relative values can generally be preserved on an orthochromatic plate or film, if the exposure is timed with regard for these parts. When the longer exposure which the use of a ray-filter makes necessary cannot be given, any of the several brands of self-screen plates on the market affords the means of getting color correction similar to the results produced by a light yellow screen on the lens, but without adding to the length of the exposure.

A double-coated or backed plate allows greater latitude in timing than the ordinary single-coated grade, which is of especial advantage when strong contrasts have to be dealt with, since an exposure suitable for the darker parts can be given without danger of ruining the values in the light passages. Films are satisfactory in chemical quality if used promptly after loading in the camera, and if developed before the moist atmosphere prevalent along the coast has time to cause deterioration.

Plateholders, or a loaded film camera, should not be needlessly exposed to strong sunlight, and some protection from the latter is necessary when removing or inserting the slides of holders, and in changing a roll of films, to be quite sure of avoiding light-struck negatives.

While the general illumination is very strong on bright days, permitting brief exposures upon shipping at some distance from the lens, one should not be influenced too much by this when dealing with foreground compositions around wharves, as the contrasts in this class of material are often great, ranging from glaring white paint work and canvas reflecting direct sunshine to deep shadows among the piling of the pier, under the counter of a black-painted ship's hull, etc. Here is where a full exposure upon a double-coated plate, with a ray-filter on the lens, is needed to secure the best possible gradation throughout.

If one employs an exposure meter which measures the actinic strength of the light as a guide to exposure, views around the piers with dark tones in the foreground might be classed the same as "average landscape," those with a light foreground half the timing, and shipping beyond the middle-distance one-fourth as much. The following tabulated information, compiled from data in my note-books, represents the average of exposures given different classes of subjects, and may serve to indicate approximately the timing required.

Exposures suggested in good light during the summer months, using fast plates possessing a speed about f:111 Wynne or 180 Watkins.

	Near 9 A. M. or 3 P. M.	Near 7 A. M. or 5 P. M.
Open shipping, surrounded by water	1-100 sec., f:11	1-100 sec., f:8
Ordinary wharf scenes	1-50 sec., f:8	1-25 sec., f:8

By good light is meant direct sunshine or bright light diffused by mist or white cloud On a dull day the exposures should be twice as long. A longer exposure is also necessary to obtain full shadow detail in nearby objects seen directly against the light.

Especially rapid emulsions, like the Eastman Speed and Ansco Speedex film, allow the exposure to be cut in half, or the use of the next smaller lens-stop.

When working from a moving vessel this factor is of greater importance than the motion of the subject when it comes to determining what exposure must be given to secure an image free from blurring. A faster shutter speed is necessary aboard a steamer than a sailing vessel, on account of vibration from the engine, but the effect of the latter may be minimized by not allowing the camera to come in contact with the rail, or other parts of the boat, holding it instead, in the hands and keeping it pointed as steadily as possible toward the subject. Even with these precautions I would not advise giving longer than 1-50 second, and when the subject is much nearer than usual or traveling rapidly across

SUNSHINE M. W. OSTENVEIS
Second Prize, July Junior Competition

the field of vision in a direction opposite to that one is moving it is safer to set the shutter at the 1-100 mark.

When photographing shipping from shore, or a boat lying quietly at anchor, much slower shutter speeds can often be used with safety, a fact worth recalling if one wishes to use a ray-filter upon a lens of moderate working aperture. I have given as long as 1-15 second on slowly moving craft without the effect of motion being apparent in the negative.

Since there is not time when photographing shipping in rapid motion to consider such a nice point in composition as the most desirable placement of a vessel in the picture-space it is better to try and include a little more of the surroundings than will be needed, thus giving latitude for adjustment by trimming, or enlarging only the desired part of the negative, when making finished prints.

The development of marines should present no difficulty, any of the usual formulas giving good results, but care should be taken not to add to the contrast of a harshly lighted subject by prolonging the time of development Instead, the usual period should be cut down twenty to thirty per cent, or the solution diluted to a similar extent. Should negatives of distant shipping show a tendency toward flatness or foggy shadows, clearer results may be produced in subsequent work by using a few drops of ten per cent bromide to every ounce of tray developer, and allowing a somewhat longer time for the solution to act.

For the benefit of readers who like specific technical details about the illustrations I append herewith such data.

AT A NEW YORK PIER. Made near 6 o'clock on an August morning, hazy sunlight, 1-15 sec., *f*:11, single achromatic lens, Cramer Inst. Iso. plate.

DRYING THE SAIL. December day, 9.50 A. M., weak sunshine diffused by mist, 1-8 sec., stop *f*:8, anastigmat lens., Inst. Iso. plate. The relatively long exposure is accounted for in this instance not only by the quality of the light and nearness of dark portions of the vessel's hull, but by the fact that a large freight shed, not shown in the picture, cut off considerable illumination.

Off to Other Ports. July, 8.20 A. M., bright sun on subject, 1-100 sec., stop *f*:11, anastigmat lens, Inst. Iso. plate.

Near Evening. Taken early in August at 5.35 P. M. in hazy light, 1-60 sec., *f*:11, single achromatic lens, Inst. Iso. plate. As clouds are not always on hand when desired, those shown were "printed in" from another negative made near the same time of the day, but had a satisfactory sky effect been present it would have registered easily on the plate with the exposure named.

A PERSONAL EXPERIENCE IN "DRAWING PICTURES WITH LIGHT"

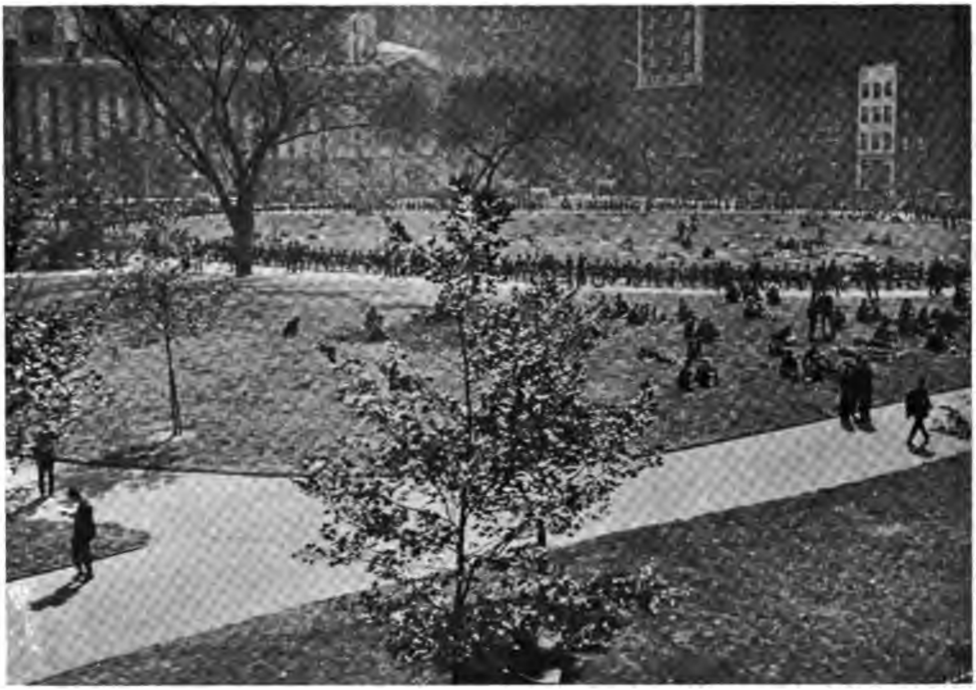
LATIMER J. WILSON

DURING the past twelve years, the period of my experience with the camera, I have sold thousands of photographs as illustrations for articles. Before becoming acquainted with the camera, I rather looked with scorn upon its accomplishments. Having been trained in various art schools, the dislike of any mechanical means of achieving a picture was inground. To obtain a suitable illustration for one of my written articles I would spare neither time nor expense in acquiring suitable material from which to make a drawing, often when a photograph would have been better for the particular purpose.

Then the day arrived when I realized the fact. I bought a cheap camera, and from that day I have used photography as a supplementary method in illustration of all kinds. I have found that not only can the usual mechanical or scientific subject be better illustrated by photography, but that the most remarkable dramatic and artistic effects can be obtained to illustrate stories. I have discovered that the camera is indeed a tool with which an artist can work. Any current exhibition of modern pictorial photography will satisfy the most fastidious person in this respect. In fact, the personality of the artist can be expressed with the camera almost as decidedly as with brush or pencil. The artistic photographer draws his masterpieces with light itself.

With the invention of the soft-focus lens, artists realized that a new means of producing subtle and beautiful pictorial compositions was at their disposal. There are many painters and illustrators who have found the camera an addition to their tools of art production.

Not only have they found it a quick means of crystalizing memory impressions, but they have used it to create the most exquisite pictures. One has only to glance through the pages of American Photography to witness the results. That no one particular kind of lens, plate or printing method is required, is shown by the diversity of materials employed. Yet there are some photographers who are so distinctive in their methods that one can identify their work. The man's personality comes forth in his choice and arrangement of subjects, and in his use of light. He expresses himself in the quality of light and shadow, and of composition.



THE UNEMPLOYED IN BRYANT PARK, NEW YORK L. J. WILSON

Three centuries ago the only way that the likeness of a person could be preserved was by means of drawing or painting. This made the person who could achieve a likeness a much sought-after individual. It gave commercial value to painting. Through all the centuries the noble craft of the painter has lost none of its artistic value. But it has lost, to a great extent, its commercial value. The popular demand for a likeness, a "crystalized memory" of relatives and friends, has been satisfied by the camera. But individuals of discrimination, persons of taste, have never approved of the ordinary photographic likeness. It lacked something which the portrait painter was able to put into his work. It lacked life.

Photographers today are finding a way to put life into their portraits. The craft has at last reached a place of dignified standing. The best portrait photographers are artists by instinct or training, and as they gradually master the principles of their craft they find that it has a far wider latitude than was ever considered possible by the employment of such strictly mechanical means. In the hands of an unskilled person the camera is indeed a poor tool. It is indeed a machine capable of bringing forth only dead and unattractive results.

The appreciation and taste of the public has changed. Perhaps the motion picture has done much to improve public taste for pictures. In any of the hundreds of thousands of daily audiences you can hear remarks critically applied to the picture on the screen. "Splendid photography," or "bad photography," one often hears. When pictures are beautiful they are frequently applauded. I have heard audiences wildly approve of some beautiful sunset, or some mountain view shown in a series of educational films. The scenes with which every one is familiar, genre pictures, farmland and home scenes, and pictures of children have been the source of enthusiasm. But I have noted that these same subjects shown as unattractive compositions have failed to elicit applause.

After all, what is a good pictorial composition? It is any arrangement of the objects in the picture which displays their charm of light and shade in the best possible manner, always concentrating the interest where it should be concentrated. One beautiful object is lost in a multitude of others unless it is in some way accentuated while the others are suppressed.

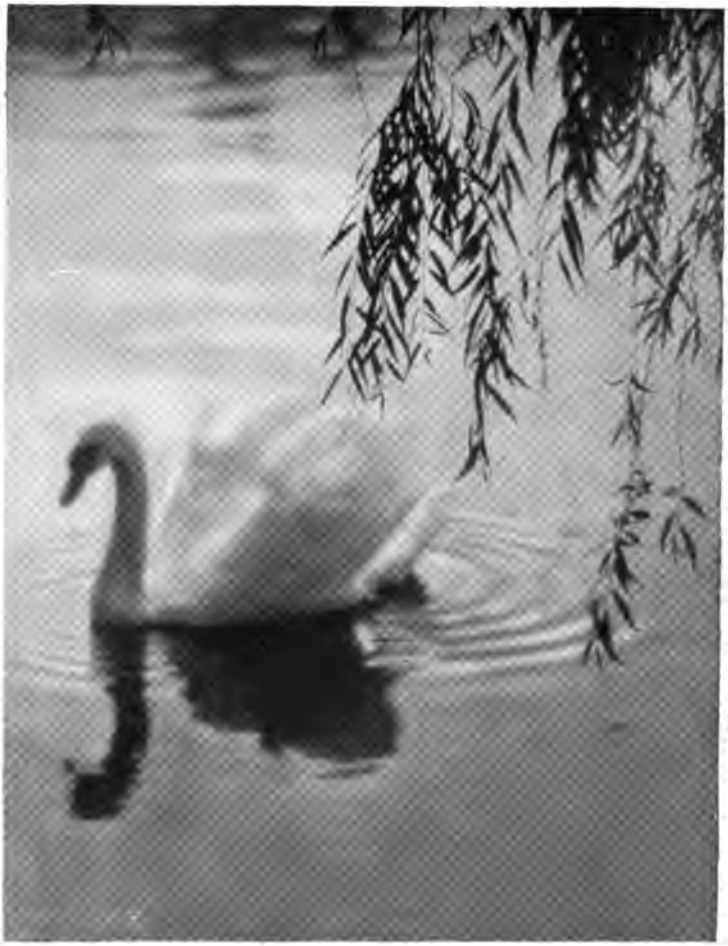
The motion picture has popularized good photography. The more restricted photographic exhibition comes next and appeals to a more appreciative and select group. The old idea of pleasing the populace by giving the people "what they want," as judged by those in authority, has been displaced by giving them "what they should want," and in its broadest sense the people really want the best. The minute I take a seat in a motion picture theatre I know whether the pictures are going to be good or bad. As a rule good photography goes with at least a moderately good story. Occasionally one finds a poor literary plot set forth in beautiful photography. If so, the pictures are the only quality that holds the audience. When neither story nor pictures are attractive the house has a scant audience.

THE OLD WAY OF STREET-BATHING, ORIGINATED BY THE CHILDREN AND FIREMEN
L. J. WILSON

It is not easy to acquire style in portrait or pictorial photography. Those who have acquired it will tell you that they have spent years in the task. There have been years of experimentation. But finally the goal is reached. As for myself, I have never attempted to aquire "style". The range of my work is so broad that I have not attempted to specialize in any one branch of the photographic art. My negatives range from the most mechanical of subjects to experiments in weird or unusual effects of handling light. Photography is "light-drawing" and whatever the nature of the subject, mechanical or otherwise, the problems of light must be considered.

For my own particular purpose I prefer a small camera of pocket size. Much of my work being magazine and press material, I have found that a 2¼ x 3¼ film camera equipped with a good lens of anastigmatic quality is the most suitable.

As an expedient I have found that a meniscus spectacle lens of about eight inches focus, mounted in front of the Tessar, furnishes a suitable means of diffusing the image. It spoils the corrections of the fine lens and shortens the focus so that the camera works at an effective speed of approximately f:3.8. The definition is not impaired to the extent that a deformed image is obtained if a slightly smaller area is included. The light circle is of course less in diameter than that of the anastigmat. Exposures by artificial light of three and four seconds are obtained, and very soft interesting effects produced. The focal length of the anastigmat is 3.5 inches. When the diffusing lens is used this is reduced to about 2.8 inches



A SWAN DECORATION

THOMAS O. SHECKELL

Honorable Mention. Second Annual Competition

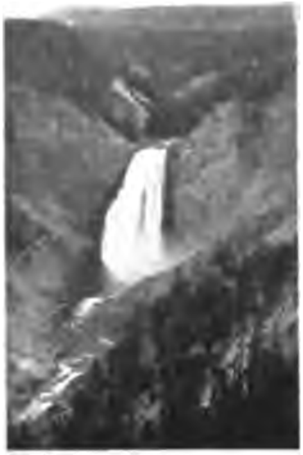


Figure 1A ADDISON WATERS

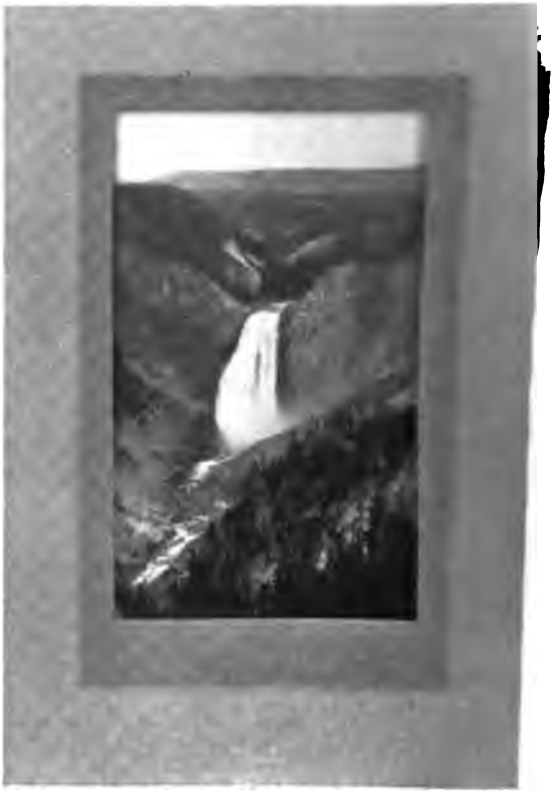


Figure 1B ADDISON WATERS

TINTING MASKS — HOW TO MAKE AND USE THEM

ADDISON WATERS

IT IS surprising how few avail themselves of the use of a tinting mask as an aid to securing a proper setting for a picture. A beautiful landscape can be rendered doubly attractive by the tasteful use of such a mask, as witness the case shown in Figure 1, in which A sets forth the scene without the use of the mask, while B shows the same scene with a tinted border. Certainly B is much more attractive and tasteful than A, yet both prints are from the same negative on the same paper. Children's pictures can be given a distinctive setting which will so enhance their charm as to draw favorable comment from the most hardened critic. And the process which does this magic is at your command with very little expense.

Probably the average person has an idea that such a mask is much too difficult to construct for him to attempt, but such is far from the truth. It requires only careful work, such as all of us are doing every day in making our regular prints. The measurements must be made with great accuracy and the guides located exactly as we explain, but the work itself is easy.

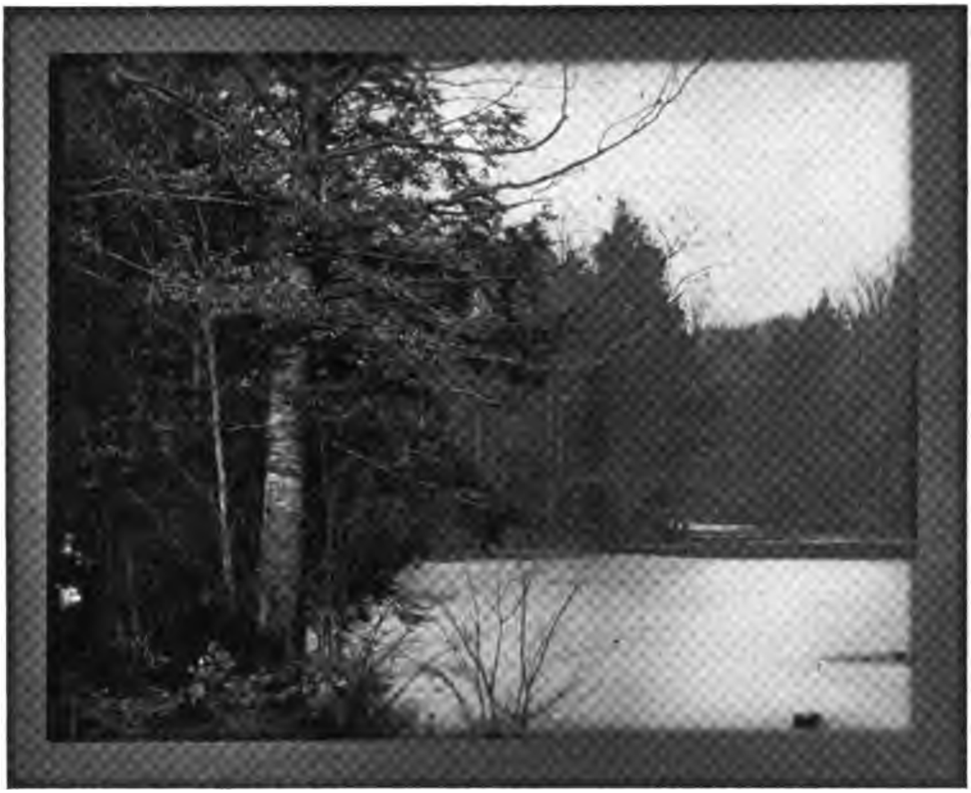
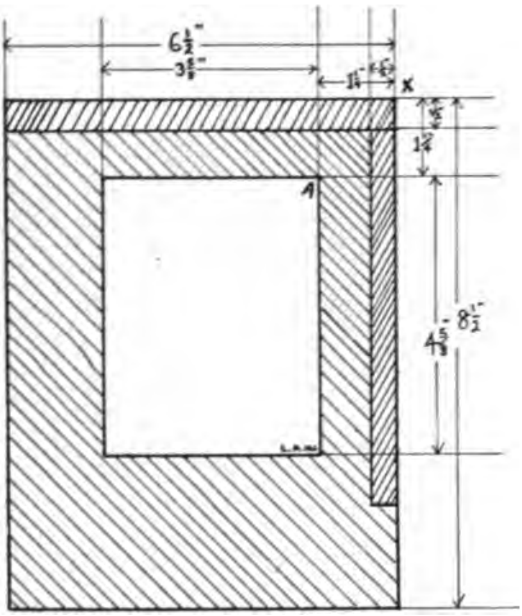


Figure 2 ADDISON WATERS

To construct a mask such as we show in Figure 2 is a simple matter, as we shall endeavor to show. Collect the following material and place it on a table where the light is good: one sheet of fine ground glass, 6½ x 8½ inches, two or three sheets of heavy red or black masking paper, a tube of rubber cement and four strips of thin cardboard about 6 inches long by exactly ½ inch wide.

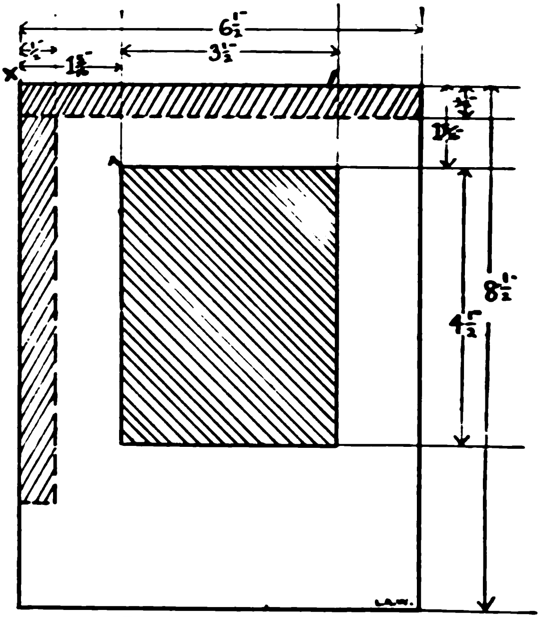
The first step is to cut a piece of masking paper to the exact size of the ground glass: viz, 6½ x 8½ inches, as shown in Figure 3. Great care must be exercised in securing a perfectly square corner at X. Now locate point A 1¼ inches down from top and 1¼ inches in from right-hand edge of paper. From A lay off line D parallel with the top edge of paper and 3⅝ inches long. Also from A lay off line C parallel with right hand edge of paper and 4⅝ inches long. Now complete the rectangle by drawing the other two sides. Take a very sharp blade, such as an old safety razor blade, and cut out along these lines. This forms the opening for the negative mask. Now take a strip of the cardboard exactly ½ inch wide by five or six inches long, being sure that the two long sides are exactly parallel and cement it along the top edge of the mask so that it exactly coincides with the edge. Do the same thing on the right hand side of the mask with another strip. This completes the negative mask.

Thoroughly clean the ground glass and lay it on the table before you with the ground side uppermost. Take another strip of the cardboard exactly the same as used on the negative mask and cement it to the ground glass at its top edge. Cement the one remaining strip down the right hand side, being sure that it forms a true right angle with the first one. This forms the guide corner for the tinting.



NEGATIVE MASK
FIGURE 3

MASK PAPER ▧ ▨ GUIDE STRIPS



TINTING MASK
FIGURE 4

MASK PAPER ▧ ▨ GUIDE STRIPS

Now turn the ground glass over so that this corner is at the upper left hand corner, with the smooth surface of the glass on top. Take a piece of masking paper exactly 6½ x 8½ inches and cement it to the ground glass with the rubber cement. This should form a perfect cover for the ground glass if both glass and paper have been cut square. When the cement has set, take the completed negative mask and lay it on top so that the guide strips are face down in the upper left corner, the same as the ground glass. Holding the mask firmly so that its edges are in exact coincidence with the edges of the ground glass, mark where each corner of the opening comes on the paper backing of the ground glass. Remove the negative mask and draw the connecting lines between the points so located. At this point is the stumbling block where many fall. Do *not* cut along these lines. They are merely registration guide lines. Instead, locate several points exactly 1-16 inch inside each of these lines and draw from them a rectangle which will be 1-8 inch narrower and 1-8 inch shorter than the first, but exactly centered within the first. Cut along the sides of this new rectangle with the sharp blade. Now the advantage of the rubber cement comes in. Start at one of the outside corners of the ground glass and peel the paper off. It will strip off easily, leaving the rectangle in the center still firmly attached to the glass as indicated in Figure 4. This completes the mask.

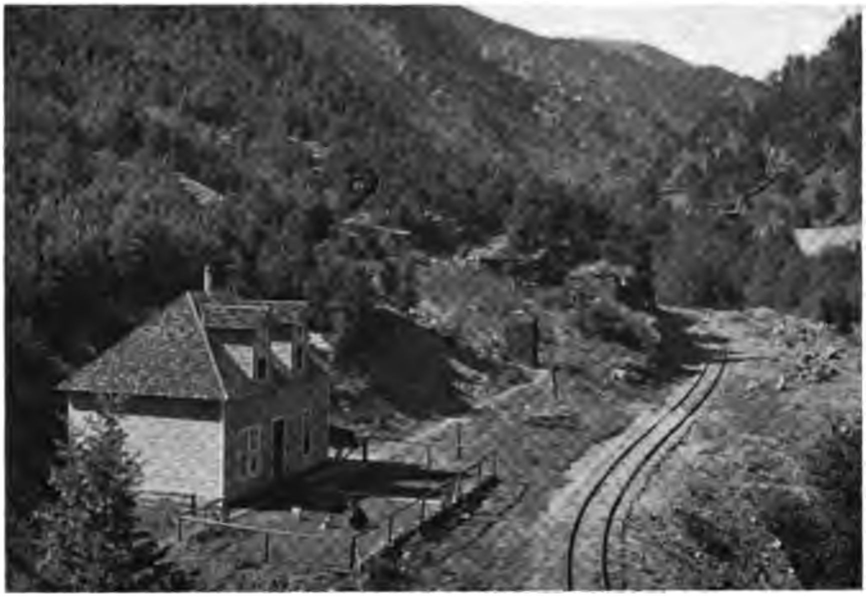
To use, it is only necessary to place your negative under the negative mask and place a sheet of whatever printing paper you are using, 5 x 8 inches in size, over it so that the upper right corner fits snugly against the guide strips on the mask. Expose the proper time for the print and remove the paper. Now place the paper on the ground side of the ground glass so that the same corner will fit against the guide strips on the glass. Expose very briefly, as you can determine by a few trials, and develop the paper as usual.

CURLS AND PEARLS J. J. SWAIN

Honorable Mention, Second Annual Competition

It can be readily seen that the design can easily be altered by pasting extra masks on the ground glass and by using masks of translucent paper. The variations are unlimited and offer the individual a chance to make his work distinctive in every sense of the word.

The need of cementing the mask to the under side of the glass may not at first seem apparent, but if you care to try once with it on top, we feel sure that you will find the slight diffusion gained by our method to be much more pleasant. The difference in size of the opening and the center mask is essential to secure proper registration and the variation given is correct for the better grade of fine, thin ground glass, but for heavy glass this distance will have to be changed slightly by experiment. It makes a more durable mask to cover the center mask by means of a thin piece of clear glass placed over it and bound there by binding tape as you would bind a lantern slide.



OUR MOUNTAIN HOME · CHARLES O. ERBAUGH

OUR MOUNTAIN HOME

Ample exposure on an Orthonon plate has yielded a negative of fine quality and the excellent tones and gradations have been accurately reproduced in the print. The result is a picture of unusually high technical merit. The subject is interesting and has been well handled; the mountain home is well emphasized by being placed in a "strong" position in the picture space and, at the same time, the mountain scenery has been excellently portrayed. This is the kind of picture that would look well if printed in a warm tone instead of black and white. The railroad track, though a rather prosaic object as a rule, makes an interesting line and in this particular picture, adds considerably to the artistic interest. Made in Colorado, 7000 feet above sea level, Cycle Graphic camera, Bausch and Lomb VIIA Protar, No. 16, 10 3-16 inches' focal length, used at *f*:22, exposure ½ second on a bright, sunny day in September at 10.30 A. M., Orthonon plate, developed with pyro, print on Azo D Hard.

PRACTICAL POINTS ON BACKGROUND

The study of backgrounds is one to which every assistant should pay special attention, for nothing is so sure a sign of second-rate work as a badly-chosen background. All first-class photographers select the background with great care, bringing all their judgment and artistic knowledge into play. In many cases photographers have made a reputation and a big business on the use and manipulation of artistic backgrounds. To reach the front rank in professional photography it is needful to become expert in fitting these accessories into their proper position with respect to the sitter and the style of the picture. To take one background to be as good as another so long as it is not cracked or the paint rubbed off is an entire mistake. As with clouds in a view, only one ground will be most suitable for a particular composition. The choice and selection of backgrounds is a fine art, depending on the personal ability of the photographer for its success, and therefore it is no easy matter to teach it to others. All that can be done is to lay down several broad principles, which must be modified to suit special cases. These principles I will try to expound.

The subject and background must always be in unity. A naked savage in the midst of his natural surroundings does not strike us with a feeling of unfitness. Put a top hat on his head and the composition jars at once. Such mistakes in artistic sentiment are seen in photographs — a lady in evening dress being placed by the sad sea waves or upon the wild and lonely moor; a cyclist in a country lane standing upon a carpet, and a man in evening dress in the midst of woods, with a curtain suspended from the clouds, are a few examples of a lack of unity in sentiment. Such compositions are not so common as they were, I am glad to say, and we rarely see stone balconies built on carpets, grass flourishing on the seashore, trees growing in drawing-rooms, and boats sailing on the mountain-side as we did at one time. These crude compositions have disappeared with the growth of culture among photographers. They are often very funny, it being a mystery how any one could have let them pass. It is not easy to avoid them in studio practice without the knowledge that these mixed compositions are in bad taste.

The sitter and background must harmonize. It is wrong to have the one simple and the other complex. For instance, we all know the elaborate backgrounds which some photographers employ with their sitters. Pose a child in a plain muslin dress against them, and the effect is at once discordant; yet with the richly-dressed society lady they harmonize well. The simply dressed need a background as simple; the more complex the personal adornments the more ornamental must be the background.

A composition must have a fine balance between sitter and background. It must not be all sitter and no background, nor all background, and, puzzle, "Find the sitter." The exact proportion to maintain is hard to lay down by rule; it is just one of those things which only a trained judgment can decide while the picture is being composed. Very few photographs are well balanced, the cabinet head, as a rule, being wanting in background, the three-quarter length having too much. The three-quarter length sitting is more often well balanced.

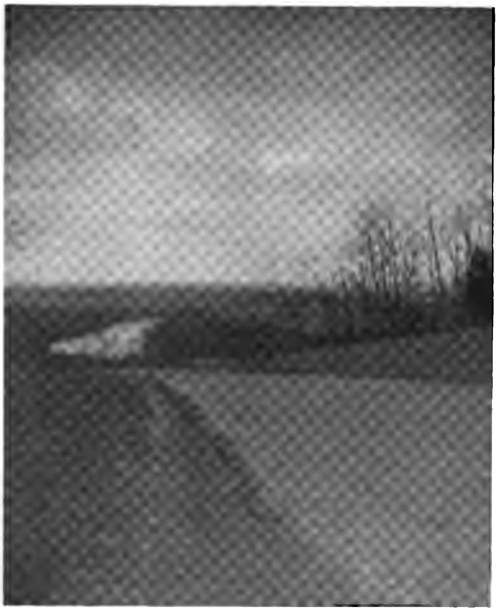
Objects depicted in the background must be in true proportion with the sitter. Failure to meet this condition is common to the majority of photographic scenic backgrounds. Place the sitter where you may, the perspective is always false, and instead of true proportion the effect is unnatural. I do not suppose that this can ever be remedied completely. With the painted background all that can be done is to avoid having vases that appear as big as houses, roads that are mere sheep-walks, and castles that must be too small for dolls to live in. The same applies to backgrounds which contain no definite outline; it is not always possible to place them in such a position that the effect produced is a real one. Nine times out of ten it is obvious that there is a background behind the sitter. What is desired is that the background, instead of being distinct from the sitter, should be a part of the whole composition. This is best seen when the proportion is accurate.

Unity, harmony, balance, and proportion are often secured by contrast. Thus the strongly lighted side of a sitter may be placed against the dark side of the background and the dark side against the light — a double contrast which gives a better composition than if the position was reversed. The same is true of the subject in white posed against a dark ground. When the composition is mainly white, then a small proportion of the black gives a contrast which restores the harmony and the balance. There is a given proportion between light and shadow in every composition from which it takes a characteristic appearance. The Rembrandt is mainly shadow, strong and vigorous in effect. As the proportion of light is increased, so the picture becomes more delicate; hence ladies and children should be photographed so that the light predominates, while men will bear a much larger share of shadow.

Our leading professionals are giving up the scenic background because they have found out that the so-called "plain" background is, in reality, an accessory admitting of endless variations. There is no such thing as an evenly illuminated surface in a photographic studio, every area being more or less shaded. The plain background may be lighted in numberless ways, all of which can be used in portraiture. To show the possibilities of a plain background, I will mention a few. Backgrounds can be lighted

From the top downward.
From the bottom upward.
From the left side.
From the right side.
From the center outward.
From the sides to center.
From the corners to center.
From the top to bottom corner.

There are several different ways of lighting a plain background, each one of which can be utilized to make an effective picture. These may also be combined to form other variations; hence, skilfully used, the plain background really consists of an infinite number of grounds. This is no theory, but a practical fact, which can be easily proved by comparing the backgrounds of our painters and photographers. No two are exactly the same, and until one has made the comparison it would hardly be believed how great is the variation and the possible number of combinations. Add to this the power of increasing and diminishing the illumination of a plain background, and it may be understood that our best photographers can get all the effects they want without the aid of the scenic background.



VALLEY FORGE, PA. W. KITCHEN

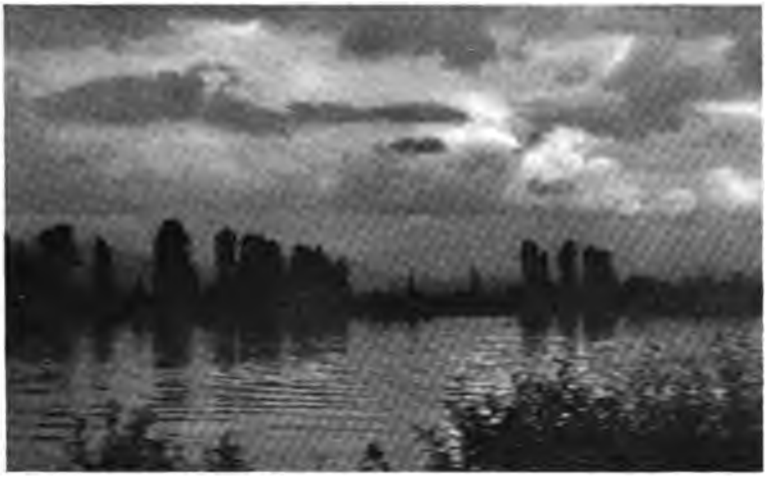
VALLEY FORGE

According to the academic standards of composition, a picture should have three definite planes: foreground, middle distance and distance. Often there are only two. The foreground, as a rule, is the most important, and very few really successful pictures are made in which there is not an interesting foreground. In "Valley Forge," the rather bare stretch of road provides a foreground that is so uninteresting that it would improve the picture very much to cut it off. The river and the distant scenery are so far off and so devoid of detail that they do not make very interesting material for a picture. This kind of view almost always is disappointing in a photograph; it looks pretty in reality because it is enhanced by color, but something more than color is needed to make an interesting photograph. Made on a cloudy day at 4 P. M. in April, stop *f*:6.3, exposure 1-25th second.

A GOOD LONG FOCUS LENS FOR HEADS

The front lens of an old Petzval portrait combination will usually cover a plate about twice the size that the doublet will cover and it makes a useful lens when used alone.

Take off the front hood and unscrew the front



AFTER THE SHOWER GEORGE S. BAIRD

lens. Then remove the back combination which has the two separated lenses, and put the front lens in its place. The hood should be put back in place of the front combination. It will be found that such a lens is an excellent one for large heads as it is of longer focal length than the whole lens and it gives a soft definition that is very suitable for pictorial effects.

AFTER THE SHOWER

This is a very well balanced little picture with an interesting sky. It is not very often that we can find a combination of landscape, water and sky that is as harmonious as this; the ruffled surface of the water, the tumbling masses of clouds and the jagged, saw-like horizon line all tell a story of disturbance and agitation. The exposure was timed correctly for the sky and water and, though the landscape portion of the picture is therefore rather underexposed, there is so little of it that it does not seriously detract. In making an enlargement of this, it might be possible to shade the sky line a little while exposing, so that it would be just a little lighter in tone than the foreground masses. We often have to compromise on exposure, and the only safe rule is to expose for the tones that are most desired. In this case the sky is the dominating feature and therefore the artist timed his exposure to suit the sky. Made in British Columbia, Canada, with a 3¼ x 4¼ Graflex, Bausch and Lomb Tessar lens of 6½ inches' focal length used at *f*:8, fair light at 4 P. M. in August, exposure 1-110 second, Eastman Graflex Roll film developed with pyro-soda, printed on Velox.

RED BROMIDES

For the production of what is known as the "red-chalk" tone, the favorite formula has hitherto been one requiring in its make-up a large proportion of neutral potassium citrate, a chemical not usually stocked and consequently unhandy to obtain at any time, now, in company with most other potassium salts, only to be had at a very enhanced price. The writer has therefore been led to make trials in other directions, and is now able to give particulars of a method of producing red tones of a particularly pleasing nature, with sparkling highlights, the print being free from the dull and sunken aspect hitherto characteristic of copper toning.

To those who are contemplating the production of red-chalk pictures for the first time, it may be well to say that in the case of most subjects, landscapes particularly, the bromide print must be exposed and developed to such an extent as would render it useless if left in the black; this, indeed, is one factor making for the superiority of the red-chalk print over one in black-and-white from the same negative.

Granted that the negative one is working from is robust and well graded, the extra exposure enables the entire scale of gradation to be recorded on the print, which in the subsequent process of toning loses its heaviness and becomes a thing of charm.

The toning bath is made by dissolving.

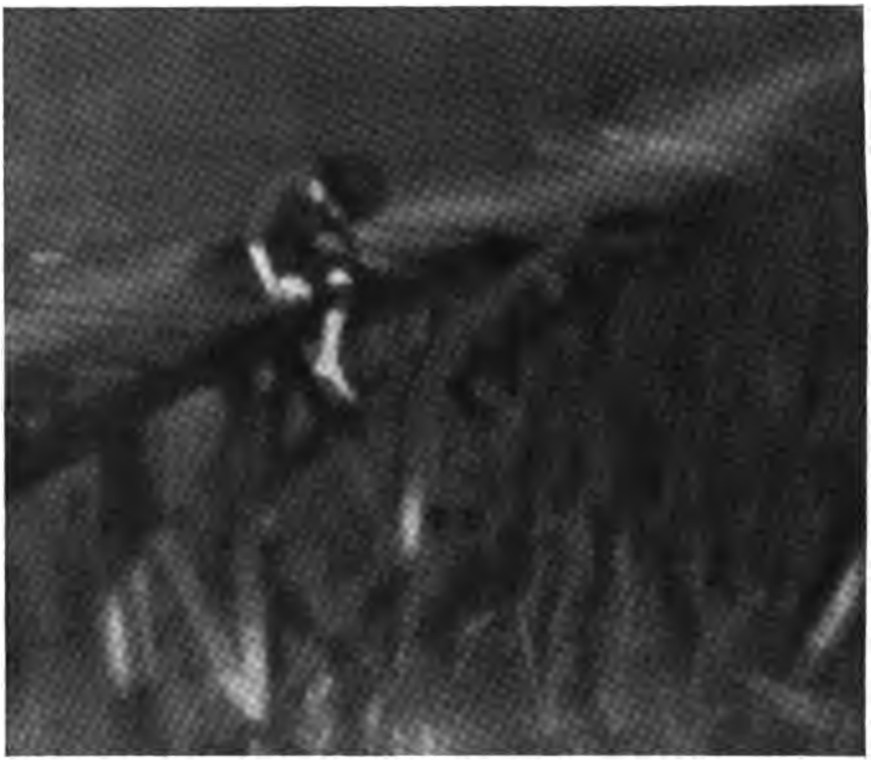
Copper sulphate	20 gr.
Potass ferricyanide	10 gr.
In water	3 oz.

This produces a muddy greenish fluid, to which is added sufficient of a saturated solution of ammonium carbonate to dissolve the precipitate and leave the solution of a clear, slightly greenish blue. After this stage has been reached, another half an ounce of the ammonium carbonate solution is added. The ammonia salt being of a very volatile nature, the quantity required will vary according to its condition; if fresh, about 200 grains will be required, and this is represented by two fluid ounces of the saturated solution.

The bromide print, which has been fixed and washed in the usual way, is flowed with enough of the toning solution to cover it, and passes through a series of colors of increasing warmth. In the early stages some most agreeable purples are produced, and, of course, the operation may be arrested at any moment: for red tones, however, the print is allowed to remain until action ceases, when ten minutes' washing follows. It will now be seen that a slight pink tone pervades the highlights, and this is removed by a brief immersion in

Liquor ammonia (strong)	30 drops
Water	6 oz.

Used in these proportions this clearing bath will not affect the density of the print; used stronger it



THE FROG'S VOICE James F. McKay

will, so that means of local or general reduction are at hand if required. After another five minutes' washing the print may be laid out to dry.

The toning solution may be used for two prints in immediate succession; after that it should be thrown away. The cost is trifling — about three cents for the five ounces. — *Amateur Photographer.*

SULPHIDE TONING

After bleaching a bromide print for redeveloping, there is no occasion for lengthy washing. Some workers believe that such washing affects the tones. Four or five minutes washing is sufficient. We believe that all silver should be bleached thoroughly so that there will be no residue left in the film which will not respond to the sulphide.

THE FROG'S VOICE

The maker of this picture evidently has learned one of the important lessons in picture making; namely, the value of simplicity. It is mainly the simplicity and suggestiveness of the picture that makes it so interesting. It tells the story largely by suggestion instead of by actual presentation. The little figure which forms the dominating point of interest in the picture is well placed and the attitude is extraordinarily natural and convincing. We can imagine the frogs croaking and can see in the tense attitude the child's anxiety to locate the sound. This is a truly artistic picture; it is treated in just the same way as a good painter would treat it. Technically, too, it is of very high quality. Made with a Cycle Graphic camera, 4 x 5, Verito lens of 7 inches' focal length, used at *f*:4, three-times filter, Hammer double coated orthochromatic plate, faint sun, 5 P. M. in June, exposure 1-25th second, enlargement on Eastman Portrait Bromide, rough matt, Grade D.

PREPARING NEGATIVES FOR PRINTING

It may happen that after a negative has been made (at times miles have been traveled to secure a particular scene or view), that through some defect it is found that the negative *must* be "doctored" or "dodged," as it is sometimes called, so that a good print may be made from it. One cause is through the plate being unevenly coated, so that the negative is much thinner at one end than it is at the other; this has caused an unequal density, which only becomes visible upon development. Another cause is due to the developer having flowed unevenly over the plate, or the plate having been unequally covered with the developer by some slight mishap in the darkroom, which may have brought about patches showing unequal development. Thus it may be that the negative needs only a little intensification at one end, where the usual method of intensifying would bring about more density at the thick end while it was needed only at the thin end. Where any of the above defects occur they can be remedied in a very simple way. Clean the back of the nega-

A KEG PARTY E. F. LEEDS

tive well from dried water marks, or emulsion spots, and coat this cleaned part with a varnish known as matt varnish, which can be purchased ready-made, or it can be made easily from the formula given here. If this coating of a plate has never been tried before, practice upon one or two clean plates, 4 x 5 will do; draining the excess off at one corner into the bottle again. Wipe the excess from the lower edge of the plate, then fan the plate dry with a sheet of cardboard. When the varnish has become set, it will possess all the appearance of finely ground glass. The plate should be warmed slightly to bring about a fine surface, it can then be worked upon in the following manner. Take an ordinary leather or paper stump the same as those used by crayon artists, rub an ordinary black-lead pencil upon a strip of ground glass, or apply a morsel of fine graphite, rub the tip of the stump upon this, then proceed to work upon the matt varnished face of the negative over the part or parts that are less dense than the rest of the negative. This is easily accomplished by placing the negative against a window, or better still in the frame of a retouching desk, so that the progress of the work may be seen. It will soon be observed that the black-lead applied in this manner causes an evening up of the defective part or parts of the negative, and being done upon the back of the negative instead of the front, the thickness of the glass aids in producing the necessary effect without any decided edge showing where the correction has been made. Whenever it happens that the negative is a little thin, and the sky becomes printed so deep that it mars the other good qualities of the negative, the ground glass varnish, as it is frequently called, serves an excellent purpose, by enabling anyone to make up a clouded sky; with a little care the clouds can be worked upon the negative to suit the operator, or better still, to represent natural clouds to suit the scene or view. Again, in this instance it will be found that the thickness of the glass aids in giving just that softness and cloud effect produced by nature.

If the operator wishes to make his own varnish instead of purchasing it, a varnish that is equal in quality to any that is made commercially, the formula given will meet every requirement. A clean ten-ounce bottle, well dried, should be used in this place.

Sulphuric ether	4 oz.
Benzol	2½ oz.
Gum sandarac	180 gr.
Gum mastic	40 gr.

The bottle and its contents must be shaken occasionally until the gums are dissolved; when dissolved the varnish must be filtered to rid it of small chips and possibly insects. This varnish will give a very fine grain upon the negative; a coarser grain can be made by the further addition of benzol. The right quantity to cover the plate will soon be acquired by practice. Should some of it flow over the face of the negative, this can be easily removed by moistening a pellet of absorbent cotton in a mixture of benzol and ether, or benzol alone.

The application of matt varnish to a portrait negative will oftentimes give several advantages. In the first place, it causes perfect diffusion of light, thus producing beautiful prints no matter whether the paper used be print-out or a developing paper. This diffusion of light brings about a delicacy not obtainable when the prints are made from the bare negative. If the shaded side of a face prints too dark, all that is necessary is to apply a faint coating of graphite over that part with the stump.

In the case of groups taken on very bright days, especially out-of-doors, the shaded sides of the faces are decidedly improved by this simple method of treatment.

In fact, as far as local intensification is concerned, this is one of the easiest, most simple and effective ways of obtaining good results, without in the least degree injuring the negative.

This plan is far better than dabbing color upon the back of the negative to lighten up the shadows. There need be no fear of obtaining a sharp, decided line showing the "doctoring," even if prints are made in direct sunlight, as would be the case if a color worked-up negative was used. Working up a negative as described is better than working upon tissue paper stuck upon the printing frame. No amount of shifting the position of the negative will cause either a false light or shade, as would be the case with a fixed-up "dodging" upon tissue paper.

Simplicity, ease of working, and highly satisfactory results can always be secured by the above plan of "doctoring" up the negative.

A HELP IN FINE FOCUSING

When you hold a focusing magnifier over the ground glass image at varying distances, you are never quite sure of the sharpness. It is a good plan to make a mark on the ground side of the glass and then focus so that the image and the mark are both sharp at the same time. The best way to preserve the mark is to cement a microscope cover glass over it with Canada balsam.

A KEG PARTY

He certainly looks happy and appears to be thoroughly enjoying the fun, though there is just a tinge of apprehension in his smile. He hopes the photographer will hurry up and get the picture because he is wondering just how long he will be able

INTERESTED A. F. FRANCE

to stand it. Technically this is an entirely successful snapshot, the textures of the wood and metal and the flesh tones in the child's face are beautifully rendered, and the background is cleverly subordinated. Made with a Conley 4 x 5 camera, fitted with a Citar Anastigmat lens of 6¾ inches' focal length, stopped down to *f*:8, exposure 1-50th second, bright light at noon in September, Standard Orthonon plate developed with pyro-soda, print on Azo, grade E, hard.

QUOTE THE SERIAL NUMBER

If you are ordering a ray filter, a lens cap or anything of the sort that has to fit a lens, it is wise to specify the serial number. The same lens may be mounted in several different ways according to the shutter it is intended to fit or the camera it is to be used on. The manufacturers cannot always tell the size for fittings unless you specify the cell diameter, but the serial number records which are kept are the surest way of all. This is of particular importance when ordering extra flanges. We know of one 5 x 7 lens that has five different types of mounting. When ordering a flange, you should always specify the diameter on the threads, to save confusion. Don't blame the manufacturer if he guesses wrong at times.

INTERESTED

Though this picture, possibly, is a little conventional, there are several points that make it evident that the maker of it gave considerable thought to its arrangement. The concentration of the interest on the occupation of the children, making the picture a genre study rather than a portrait group, is a good point. The children all appear to be a little bit self-conscious, but the posing and lighting are excellent. The doll, looking right into the camera while all the children are intensely interested in something else, is a clever touch. Technically the picture is very good, though we would prefer a print with just a little less "snap" and a little more detai in the highlights. Made with a 5 x 7 view camera, Goerz Dagor lens of 8¼ inches' focal length, stopped to *f*:11, half second exposure on a bright afternoon at 3 P. M. in May, Standard Polychrome plate developed with pyro-metol, and print on Azo Hard.

MOUNTING ON LINEN

Prints that are to receive a lot of handling, such as photographs of samples carried by traveling salesmen, may be rendered durable without adding very much to their bulk or lessening their flexibility if they are mounted on linen. The best grade to use is the kind that is used for making roller curtains. One photographer found that this cloth contains a sticky substance in the sizing which would act as a paste when the shade cloth was moistened. Muslin of fine weave is very suitable and can be attached to the print by means of starch paste. The best results are obtained by squeegeeing the prints on to a ferrotype plate and mounting the muslin on the back of the print. It will strip off when dry and the paste that may get on to the ferrotype plate will do no harm but will come right off as soon as it is dry.

NEMASKET RIVER JOSEPH F. WESTGATE

NEMASKET RIVER

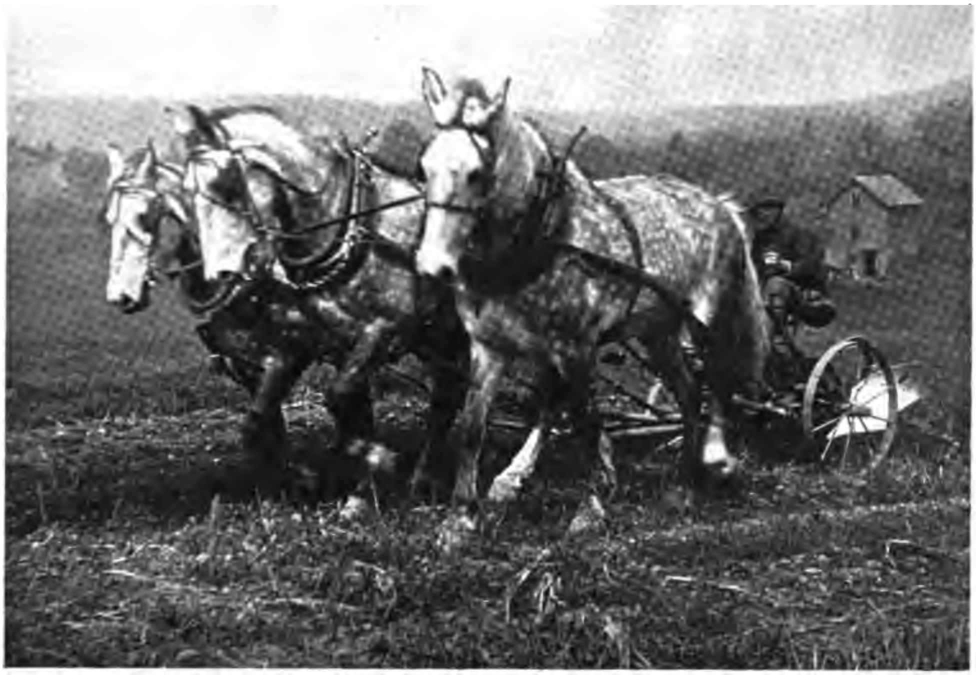
This is the kind of subject that is exceedingly attractive in nature but often makes a very disappointing picture when photographed. It depends for its beauty so much on color that the loss of this often robs the picture of all interest. However, if the photographer can translate the colors of nature into shades and gradations of tone that are so true that they suggest color, he will have retained much of the beauty and he will be able to make his photograph attractive. This can be done by the use of orthochromatic plates and filters, and by accuracy and skill in exposure and development. The varying shades in grass and foliage, the color of the sky and of its reflection in the quite waters are all adequately suggested in Mr. Westgate's photograph and this is sufficient to prevent the picture from being uninteresting. Its success is due almost entirely to its well rendered tones. Made at Middleboro, Mass. with a No. 1 Special Kodak, 2¼ x 3½, fitted with Zeiss Kodak lens of 4¾ inches' focal length, stop *f*:11, ten-times filter, sun shining through clouds, exposure 1 second, Kodak N. C. film developed with M. Q., enlargement on Cyko Plat from part of the negative.

THE DARKROOM LAMP

If you use an electric incandescent bulb in your darkroom lamp, the best bulb to use is the old style, carbon filament type which is high in red rays. If post office paper is used to filter the light, it must be remembered that post office paper is by no means everlasting and that it changes color by continued exposure to heat and light. Do not trust the ruby globes sold by photographic dealers too implicitly; all ruby globes are not photographically safe. If the globe is one that is "dipped," it is a good plan to cover the tip with a piece of surgeon's tape as the tip acts as a condenser and passes quite a lot of white light.

THE DAPPLED GREYS

In photographing persons or animals in motion, there are always two distinct phases of motion to be considered; the movement of the body as a whole and the movement of parts of the body. If we want to photograph a man walking, we shall find that a comparatively slow exposure of about 1-25th of a second will be fast enough to stop the general forward motion of the man, but the feet, except at the instant at the beginning or end of each step, have to travel twice as far and therefore have to move twice as fast in order to keep up with the rest of the body. So it is quite likely that an exposure fast enough to stop the general forward motion of the body, which would not be more than 4 or 5 miles an hour, would not be fast enough to stop the motion of the feet, which is twice as fast as the general forward movement. This is just the same, of course, in the case of four-legged animals and the chances of getting blurred hoofs are doubled. This is the reason why there are blurred parts in Miss Hitchcock's picture of the "Dappled Greys." The exposure was 1-25th second, and this was fast enough to stop the general forward motion of the group, but not fast enough to deal with the more rapid movement of the horses' hoofs. Those who have done much speed work with a Graflex camera will have discovered that there



THE DAPPLED GREYS MARGARET S. HITCHCOCK

are times when a compromise is necessary and when blurred feet or wheels are better than total failure through underexposure. The advantage of using a long-focus lens is apparent in the pleasing perspective in this picture which, in spite of the slight blurring in parts, is remarkably successful. Made with a 5 x 7 Seneca camera, Rapid Symmetrical lens of 16¾ inches' focal length, stop U. S. 8, good light, bright sun with clouds, at 9 A.M. in May, exposure 1-25th second, Polychrome plate developed with pyro, enlarged on Normal Argo Enlarging.

STOPPERS

Those who have used glass stoppered bottles for the alkali solutions of developers have probably experienced some difficulty in removing the stoppers from the bottles. Glass is attacked by alkaline solutions, especially on a ground surface. You can very easily avoid all trouble of this sort by putting a little vaseline on the stopper, but it is better to use a rubber stoppered bottle for such solutions. With wide-mouthed bottles holding caustic soda or any chemical that has a tendency to absorb moisture from the air, a waxed cork is necessary. Waxed paper wrapped around the cork is almost as good. A little vaseline on the bottle will make such a stopper practically air tight.

FILTERING

When making up developers, always filter the solutions. You may not have filter papers at hand, but absorbent cotton is usually available. Wet the cotton before putting it into the funnel, otherwise it may float out of place, and let the solution go through with a splash. Of course you can refilter this liquid, but if you put the cotton in rightly, you will avoid the formation of bubbles in the filtrate. A funnel works better if the stem is cut diagonally, especially in filtering, as the liquids pull through more freely.

FILMS AND DAMP WEATHER

When you work film packs in damp climates or along the seashore, don't leave the camera or packs exposed to dampness. Don't leave your camera out on the veranda on damp nights at the shore. If your packs later stick and don't pull, you have yourself to blame. With moderate care in protecting film packs you will have no troubles. With roll film cameras, damp weather will cause the film which happens to be in place over exposure aperture to buckle and warp, so that on large apertures you may have patches out of focus, or if depth of lens is sufficient, you may have distortion effects. Buckled films can be spotted, as the margins of exposure may be wavy instead of straight lines corresponding to the rectangular aperture of the camera back.

A PHOTOGRAPHIC INK

A good reliable ink for writing on photographs, which may interest some readers, can be made up with the following chemicals, thus:

Potassium iodide	10 parts
Iodine	1 part
Gum arabic	1 part
Water	30 parts

The resulting ink will produce white lines on the background of the photograph.

F NUMBERS

The photographic worker, either amateur or professional, who is at all interested in lenses may, I think, be assumed to have an elementary acquaintance with the numbers (*f* numbers) which denote the rapidity or "speed" of the lens. Nevertheless, I have come across plenty of workers of eminence, both in the amateur and professional field, who could not say for the life of them at what aperture a lens was being used, and did not think it necessary that they should have such knowledge of a lens's "speed." I am not saying that their work suffered on that account, but that was probably because they were constantly using the same lens at the the same aperture, and thus eliminated speed from the varying factors which govern exposure. However, it can hardly be gainsaid as a general rule that one should know with fair accuracy what are the *f* numbers of an objective, and as many old lenses which one may pick up for a few shillings second-hand are not marked at all with the diaphragm apertures, or often are marked with numbers which will mislead the present-day user of exposure tables and meters, I make no apology for devoting one chapter of this series to the subject.

The *f* number of a lens, such as is marked on lenses of the present time, is a ratio or quotient. It is the focal length of the lens divided by the diameter of the diaphragm aperture; in other words, the number of times the diameter of the stop will "go into" the focal length of the lens. For example, a lens of 16 ins. focal length with a diaphragm aperure of ½ inch has an *f* number of *f*:32. Therefore, to find the working aperture of a single lens, all that is necessary is to know the focal length and to divide this by the diameter of the largest stop, repeating the process in the case of the smaller diaphragms.

For measuring the diameters of the diaphragm, a convenient plan is to cut a wedge-shaped piece of stiff paper, or soft card, of such taper form that the point will pass through the smallest diaphragm but the thick end will not go through the largest. The card should be of such narrow angle that the length which fulfils these conditions is about 5 or 6 inches. Then, in order to find the diameter of each stop, push the paper wedge into the stop, and with a finely pointed pencil make a tiny mark on each side of it where the edge of the stop touches the paper. By then setting a rule across the wedge, with its graduated edge touching these two marks, you can measure the diameter of the stop with as much accuracy as is necessary for practical work. As I have said, the focal length divided by this measurement gives the *f* number or working aperture.

The above rule is correct only for single lenses, and only for them when the diaphragm is in front of the lens. For single lenses which are used, as they are in rare cases, with the diaphragm behind the lens, and also for all double lenses where the diaphragm lies between the two components, the method of measuring the working aperture which has just been stated is not exactly correct. This arises from the fact that the front lens causes a certain convergence of the bundle of rays which, passing through it, fall upon the diaphragm, and therefore this latter is not the actual aperture in the diaphragm plate, but an imaginary aperture which is slightly larger. For practical purposes the difference is not enough in nine cases out of ten to make any difference in practical work, but there is a very simple method of determining the exact diaphragm aperture which must be used in finding the *f* number of a doublet lens. It is as follows: Set up the camera with the lens fixed to it in the ordinary way and focus upon some distant object; in other words, set the camera at the focus for infinity. Then remove the focusing screen and insert in its place a piece of opaque card, with a needlehole about in the center of it. The readiest way to do this is to cut the card the size of the plate which the camera takes, and to insert it in the dark-slide, placing the latter in its usual position and pulling out both the shutters. If the camera is fitted with single metal slides or is a film camera, it is not a difficult matter to fix the pieces of card in the position previously occupied by the focusing screen. Then take the camera into the dark-room and fit into the lens cap a disk of bromide paper, placing the cap upon the lens, with the sensitive surface of the paper facing the front glass. An inch or two of magnesium ribbon is now burnt an inch or so away from the card at the back of the camera, when, on developing the disk of bromide paper, a dark circular patch will be obtained which is the diameter which must be used for arriving at the real *f* number in the way already described, namely, by dividing the focal length by the diameter. Instead of exposing bromide paper, the needlehole can be pointed to a bright sky and a piece of ground glass pressed against the hood of the lens. The image of the real diaphragm can then be seen and measured, but the plan of exposing a piece of bromide paper is much the more convenient. It should be said that the extension of the camera must not be altered between focusing upon the distant object and the exposure of the bromide paper disk in the dark-room.

So much for the method of finding the true *f* number of a lens. I now pass to say something on the various series of *f* numbers which are used at the present time and have been employed in the past. At the present time it is customary to provide lenses with a series of diaphragm apertures (usually by means of an iris diaphragm), each of which requires double the exposure of the preceding diaphragm. Thus, *f*:16 requires double the exposure of *f* 11:3, and the latter double the exposure of *f*:8. The exception to this rule is the maximum aperture of modern lenses which work at apertures greater than *f*:8. The *f* number which requires an exposure of half *f*:8 is *f*:5.6 while *f*:4 requires half the exposure for this latter, or one-quarter of that required at *f*:8. But generally lens makers, quite naturally, make the lens with the largest aperture at which it will work, and usually introduce an aperture intermediate between this and *f*:8. Thus, many large aperture anastigmats are marked with the *f*:4.5 aperture, with *f*:6, and then with the series upon the plan just mentioned beginning with *f*:8.

This arrangement is one which, I think, perfectly fulfils all the ordinary requirements of the photographic worker, but in the past, other systems of marking lens diaphragms have been devised. Most of these are obsolete and survive only on old lenses, such as one purchases second-hand. Only one is still used for the marking of lenses made at the present time. This is the "Uniform System" devised years ago by the Royal Photographic Society, known by the initials "U. S.," and practically limited at the present time to lenses made in America, or fitted to cameras of American make, a fact which is no doubt responsible for the belief sometimes held that "U. S." signifies "United States." The object of the "Uniform System" was to afford a ready means of calculating the exposure with any stop when that at any other was known. Hence *f*:4 was taken as a standard aperture and called No. 1, it being recognized that this working aperture is the largest which can be used in ordinary work. The stop requiring double the exposure was called No. 2, and is *f*:5.6. Similarly, No. 4 is *f*:8, and No. 8 *f*:11.3.

Opticians in the past have, however, adopted other methods similar in plan and intention to that of the Royal Photographic Society, but starting with a different aperture, as the one to be called No. 1. Thus, the International Congress at Paris in 1889 chose as the standard diaphragm one of *f*:10 aperture, devising the other numbers of the series so that each stop required double the exposure of that preceding it. According to this system, therefore, No. 2 is *f*:14 and No. 4 is *f*:20 while the lenses were marked as ½, ¼, and ⅛, for stops requiring one-half, one-quarter, and one-eighth the exposure at *f*:10. Many lenses of Continental make are still to be found with the diaphragms marked according to the system.

A further system was used for some time by the firm of Dallmeyer, according to which the stop marked No. 1 was one of aperture not *f*:10 but *f*:10 =(*f*:3.16), the succeeding numbers being devised to require, each, double the exposure of the preceding. Thus No. 2 is *f*:4.7, No. 4 is *f*:6.32, and so on, but it is at least twenty years since any Dallmeyer lenses have been marked in accordance with this system. Two Continental makers did also for some time mark their lenses according to the Dallmeyer standard of *f*:3.16, but choosing other stops, which they designated by numbers representing the number of times of exposure required as compared with *f*:3.16. It may be that lenses by these makers (Goerz and Voigtländer) are still to be found with markings according to this system, although I cannot say that I have ever come across any.

Then another system of marking with numbers which expressed the relative exposures required was introduced some years ago by Zeiss, and, like the numbers of other Continental makers, has long been abandoned. According to this system the stop marked No. 1 was, in the first instance, *f*:100. A stop requiring one-half this exposure was marked No. 2, and is *f*:71; one requiring one-fourth the exposure was No. 4 (*f*:50). Lenses marked in this way can readily be identified with the system from the fact that the smaller diaphragms have the smaller numbers, while with all other systems it is the other way about. Subsequently, Messrs. Zeiss adopted *f*:50 as the No. 1 diaphragm, No. 2 then becoming *f*:36, and so on.

This brief synopsis of the various systems which have been employed covers all the lenses which are likely to come into photographers' hands at the present day. One other system may perhaps be mentioned, as it is still in use by the Zeiss firm and may mislead those who are not familiar with it. In the case of convertible lenses the diaphragms are marked with the actual diameters in millimeters, so that the photographer must find out for himself the *f* number when using the lens by itself or in combination with another. — *British Journal of Photography.*

A USE FOR LENS CAPS

In the old days the lens cap was often used instead of a shutter as a means of exposing the plate. Even in outdoor work the cap was often used and some of the old timers were so proficient in snapping the lens cap off and on again that they could give as short an exposure as about one fifth of a second with a cap. Nowadays a cap is very rarely used in this way except, possibly, by a few of the older portrait photographers who still cling to old habits, but, all the same, a cap is very useful as a protector of the lens from dust and dirt and when lenses are put away, it is an excellent plan to have a snugly fitting cap at each end.

HOW TO DO IT

How to get the people interested in your studio and your pictures is the one thing you must do. Other men, who have been long in the business, have tried all the schemes listed in the catalogue and they have learned that what will tempt the people at one time will fail in another. In order to get the people into your studio it is necessary to study them. Reduction in price will bring in one class of people; invitation to an opening and a big bowl of punch might bring in another class. Of course, there is always a larger interest in a new studio than in an old one. It is always much easier to get the people in a small city into your studio than it is in a large one. The question is how to get them there, and each town and each city must be studied separately until the right way is found, then work this as long as it will work and then go after them in another way.

Once in the studio, the rest is easy if you are the salesman, or have a salesman who understands the people. One of the arguments which can be used, if carefully handled, is to convince the patrons that they have a large number of friends who would be pleased with pictures of them. There is born in everyone just a little admiration of themselves, and they like to see themselves on paper and send this to their friends, and very few object if the photographer succeeds in making the picture a little better than the original.

Whatever you do to induce customers to your studio, always give them more than you have advertised, in one way or another. Convince them that they have received more than their money's worth and they will come again.

One of the best ways we know of to secure patrons and to get people you are looking after into your studio is to have as fine a reception-room as you possibly can, with the best photographs that you can make on the walls. Redecorate it, repaint it, clean it and put up new pictures, and then write out personal letters asking Mrs. So-and-So to visit your studio on a certain afternoon at a certain time. On that same afternoon invite several other ladies whom you know to be her friends, so that when they meet they can have a social chat together, and they get the idea conveyed to them that the other is your customer and if you can make pictures good enough for them they are good enough for anyone. Then get another lot in the next afternoon or the next week, always taking care to invite on the same day, specifying the hour, those ladies whom you know are very friendly with each other. — *Ohio Photo News.*

Air space lenses are not necessarily unsymmetrical. They may be symmetrical as well, just as cemented lenses may be of both types. When a lens has front and back elements of the same focus, and also of the same optical construction, it is symmetrical, and when focus is dissimilar, although type of construction is same, we call them semi-symmetricals.

THE PHOTOGRAPHIC REVIEW

E. J. Wall, F. C. S., F. R. P. S.

Retouching Mediums. — The following are given as good retouching mediums:

Gum dammar	40 gr.
Canada balsam	½ drachm
Turpentine	4 oz.

Or:

Gum shellac	75 gr.
Gum mastic	75 gr.
Gum sandarac	120 gr.
Ether	5 oz.

Or:

Gum dammar	120 gr.
Turpentine	5 oz.

Or:

Common resin	120 gr.
Turpentine	5 oz.

The gums should be crushed and if a mortar and pestle are not handy, wrap them in a piece of stout paper, folding this over several times, and pound with a hammer. The solutions should be filtered through absorbent cotton before use. (*Bull. Phot.*, 1921, **28**, 329).

Other formulas are also given. Crystal varnish is said to be an ammonia varnish containing shellac, which can also be made with:

Ammonia-alcohol	3½ oz.
Shellac	120 gr.

Ammonia-alcohol is a solution of ammonia in alcohol. The mixture should be heated. A good cold varnish is made with:

Copal	1 oz.
Amber	1 drachm
Ether	11 oz.
Acetone	8 oz.
Chloroform	3 drachms

Prolonged digestion is required to dissolve the gums, which should be powdered. Another good one is:

Gum dammar	120 gr.
Alcohol	3 drachms
Benzol	3 oz.

A collodion varnish can be made with:

Pyroxylin	40 gr.
Acetone	32 oz.

then adding:

Amyl acetate	64 oz.
Benzol	64 oz.

The following is also said to be an improvement on those on the market:

Gum sandarac	3½ oz.
Benzol	15 oz.
Acetone	16 oz.
Alcohol	8 oz.

After solution filter through paper. (*Bull Phot.*, 1921, **28**, 10). Crystal varnish, in England at least, always means a dammar-benzol varnish and is used for lantern slides and autochrome plates. The collodion varnish given is ridiculously weak, for the ratio of pyroxylin to solvents is 1:1920. A good formula is:

Pyroxylin	90 gr.
Acetone	1¼ oz.
Amyl acetate	2½ oz.
Benzol	2½ oz.

Or a ratio of about 1:33. This is given in *Cassell's Cyclopedia* 1911, 96. It will be seen that the ratio of the solvents is the same. The final formula is merely a modification of one given by Valenta (*Phot. Korr.*, 1893, **40**, 221; *Jahrbuch*, 1893, 105) and the correct formula is:

Gum sandarac	100 g	40 oz.	170 gr
Benzol	400 ccm		16 oz.
Acetone	400 ccm		16 oz.
Absolute alcohol	200 ccm		8 oz.

Solution can be effected by careful heating on a water bath.

Chloramine T as a Hypo Eliminator. — The note by Mr. Shelberg (*This Journal*, 1922, 267) as to the use of this compound as a hypo eliminator is interesting and it is obvious that its activity is entirely due to the sodium hypochlorite, NaOCl. Possibly some readers may not know that the use of hypochlorite was suggested by F. W. Hart (*Brit. J. Phot.*, 1866, **13**), especially the zinc compound. Gunther (*Ibid.* 1876, **23**, 571) recommended Eau de Javelle, which is sodium hypochlorite. On the score of cheapness either the sodium or potassium salts have the preference over chloramine T, as they can be prepared from chloride of lime at 10 cents per pound. The method is to rub up:

Chloride of lime	62 g	1 oz.
Sodium carbonate	93 g	1½ oz.

with a little water so as to make a thick cream and then add:

Water	500 ccm	8 oz.

Filter and wash the filter with:

Water to make	1000 ccm	16 oz.

A few drops of this makes an efficient hypo eliminator.

Printing on Fabrics — The following is said to be a good method for printing on fabrics, which should be well washed first if greasy. The strength of the salting bath must vary with the thickness of the material, the following being suitable for linen:

Gelatine	250 gr.
Magnesium lactate	250 gr.
Common salt	250 gr.
Water	100 oz.

Soak the fabric well and thoroughly dry. If the stuff is cambric or silk use only 50 oz. of water. Then immerse in:

Citric acid	250 gr.
White sugar	250 gr.
Water	100 oz.

Dry and float on a silver bath 60 grains to the ounce for 5 minutes (*Bull. Phot.*, 1922, **29**, 214). This is a rehash of a formula given in *Cassell's Cyclopedia of Photography*, 1911, 235. This first bath here given is half the correct strength, and the citric acid bath should be used after the silver bath, so as to act as a preservative, not before.

A Soft Working Developer — C. W. Long very highly lauds the addition of ammonium persulphate to the pyrogallol developer for obtaining softness in negatives. He uses Eastman portrait film and the pyro developer recommended for the same, and to every 2¼ oz. adds 5 drops of a 10 per cent solution of potassium bromide and 5 grains of ammonium persulphate dissolved in 4 oz of water. This he states absolutely prohibits any limitations in the direction or intensity of lighting, overcomes halation, and obviates to a great extent the use of a color filter for cloud work. (*Photo Era*, 1921, **46**, 290). Apparently the addition of the persulphate was previously suggested by Mr. Cohen in *Photo Era*, Aug. 1919. Exactly what the action would be is an open question, unless strict photometric tests on the H. & D. system are made. But as Mr. Long states that he increases his exposure, and as he dilutes his developer 2½ times, it is an open question whether the secret of his success does not lie in this dilution of the developer and unconsciously reducing the duration of development. On the other hand the persulphate dissociates in the water into ammonium sulphate, sulphuric acid and oxygen, according to the equation:

$$(NH_4)_2\,S_2O_8 + H_2O = (NH_4)_2SO_4 + H_2SO_4 + O$$

It is true that with such a small quantity as 5 grains there would be only 2.15 grains of sulphuric acid formed. Still this would neutralize about 3 grains of sodium carbonate, of which only 9 grains are used in all, therefore the acid would neutralize one third. W. B. Bolton (*Brit. J. Phot.*, 1898, **45**, 62) found that by using persulphate as a bath prior to development, from 1 to 5 per cent strength, there was produced general flatness of the image; but if some bromide was added to the 5 per cent solution, the development was slower and the contrasts increased. Bolton also stated that when the persulphate was added to the pyro developer, it did not cause any discoloration, and this was ascribed to the oxygen attacking the sulphite in preference to the pyro. Still he found the addition increased the contrasts. Namias (*Jahrbuch*, 1902, 120) dealt with the action of persulphate on the developers and assumed that it abstracted hydrogen and formed a sulphonic compound, according to the equation:

$$R.H.H.H. + (NH_4)S_2O_8 = (NH_4)_2SO_4 + H_2O + R{+}HSO_3.$$

in which the first formula stands for the developing agent. It was found that hydrochinon gave a yellow solution with dark green crystals; with eikonogen a precipitate of the base was formed; amidol turned brown; metol gave a violet color: glycin was unaltered for more than twelve hours; pyro turned yellow and then brown. Here there was no sulphite, so that the reactions are hardly comparable to practice. The last formula in the above equation stands for the sulphonic developing compound, which in the case of hydrochinon was readily crystallized and proved to be a sulphonic salt. K. Schaum (*Jahrbuch*, 1903, 193) stated that soaking an exposed plate in persulphate prior to development removes halation and the effect of overexposure, even exposure for an hour to daylight and sunlight. It is obvious from Schaum's remarks that the preliminary bath would reduce contrast, but it would seem doubtful whether in the presence of sulphite and the developing agent, any action could take place on the latent image.

THREE-COLOR SLIDES — C. K. Teamer & E. E. Miller recommend the use of Cramer spectrum plate and filters for obtaining the constituent negatives with a developer of:

Water	1000 ccm	8 oz.
Kodelon	3.9 g	15 gr.
Sodium sulphite	15.5 g	60 gr.
Potassium carbonate	18.2 g	70 gr.
Potassium bromide 10% sol.		

The bromide should be added if required, and about 5 drops to the 8 oz. The edge of the plate, or the corners, should be marked in some way so as to be able to distinguish the negatives. Development should be for exactly 2½ minutes at 18° C. (65° F.), and it should be possible to read type matter on a piece of white paper through the negative, the negative being held 4 inches away from the type. Eastman positive film is used for making the positives and as the silver salt is not used the packet may be opened in white light. The film should be sensitized with:

Potassium bichromate	20 g	315 gr.
Water	1000 ccm	35 oz.

When dissolved add ammonia water until the color changes from orange to lemon yellow. Bathe for 5 minutes at 16° C (60° F.), drain and wipe the back with a wad of cotton. As the film will not keep more than three days, no more than required should be treated. Solio paper should be used as an actinometer and when the highest light shows the slightest tint it is finished. Carefully clean the celluloid and place in contact with the negatives and print exactly the same time as the Solio was printed. It is advisable to use a small printing frame and build up round the sides with black cardboard to about 6 inches as this prevents side light from acting; this is important, as the printing being done through the support, there is slight separation from the sensitive surface. Each print should be marked, as by cutting off one, two or three corners for the different colors. The prints are to be developed in water at from 38° to 45° C. (100° to 112° F.). The gelatine will soon begin to dissolve, and if the film is moved about it will be washed off. Then each film should be rinsed in cold water and dried. Underprinting is known by the occurrence of large clear patches of celluloid; overprinting by the whites not clearing. Fixing, that is the removal of the silver salt, should be effected with hypo and ferricyanide for preference. The dye baths are:

	Blue	
Water	1000 ccm	35 oz.
Methylen blue	2 g	3 grs.
Sodium carbonate	1 g	15 gr.
	Red	
Water	1000 ccm	35 oz.
Basic fuchsin	2 g	3 gr.
Sodium carbonate	1 g	15 gr.
	Yellow	
Water	1000 ccm	35 oz.
Tartrazin	3 g	4 gr.
Glacial acetic acid	10 ccm	3 drachms

Each film is dyed up in the color complementary to the taking filter, that is the red in the blue bath, the green in the red, and the blue in the yellow bath. When stained enough, dip two or three times into clean water and dry. To reduce the staining wash in water, but with the yellow this must be carefully watched, as the dye is very soluble, but the bleeding can be stopped with an acetic bath. To mount make a solution of scrap celluloid in amyl acetate as thick as syrup. Cement a mask to a cover glass with a dab of the cement at the corners. Place the blue print down and cement also by the corners; when the cement has dried, clean the celluloid of the blue print and superimpose the yellow print and after registration cement at the corners; treat the red in the same way and bind up with a cover glass. (*Camera*, 1921, **25**, 14). There is obviously a misprint in the conversion of the metric and common weights, and assuming that the metric are right, the dyes should be 30, 30 and 45 grams

IN THE TROPICS — M. R. Allen
d advice as to photography in the
nd that film packs were less liable
than roll films, and this he ascribes
r being contained in the former, and
e films too tightly he met with less
lms should be bought in the first
r the tropics, and as an additional
ld be stored in air-tight boxes sur-
umpled newspapers. Exposed film
w in density and not evenly, due to
admitted and to contact with the
When traveling, solutions are a
emicals should be carried dry in air-
. The temperature of the water is
d 26° C (80° F.), which is dangerous-
ing point of the gelatine. The only
be to surround the developing dishes
le is also met with in drying the films.
dry they must be kept isolated and
e another, to prevent mildewing and
gether. Experiments with calcium
ture absorbent proved a failure, on
ifficulty of drying the chloride after
satisfactory drying agent was found
wspapers. These were dried in the
in the film container and this was
pt near noon on bright sunny days.
is opened, the paper exposed to the
films kept in the shade. The box
d was provided with rubber gaskets
ps with thumb screws, which en-
be kept air-tight. (*Camera*, 1922, **26**.
s ago it was suggested that oatmeal,
d be used, but as these are trouble-
t of their dusty nature, ordinary
ls were recommended. These were
baked in an oven and placed while
ght container with the sensitive
in this case was platinotype paper.
n is an excellent and handy material
newspaper is usually obtainable.
density mentioned by Mr. Allen is
g, and this has always been one of
h roll films; in the early days the
structure of the black paper on the
reat trouble, and numerous patents
out to prevent this.

— E. König announces the intro-
Hoechst Farbwerke, of this new
esensitizer, to replace the safranins.
well known, stain the gelatine very
a trouble to remove, and König
so stain the substratum of chrome
nderlying the emulsion, that the
removed by the usual nitrite bath.
of new desensitizers has been
their only disadvantage seems to be
sis" of the sensitiveness is a little
ather more time has to be allowed
on bright light and development is
The number of desensitizers ap-
t as great as that of the sensitizers,
two has been chosen, which forms
ubstance that is used in the same
nosafranin, 1:5000, and has the
that there is no staining of the
e (*Phot. Rund.*, 1922, **59**, 89). It

is up to some American chemist to give us now a La product and, knowing that the chief requirement seems to be the presence of the two amino groups ought not to be a difficult matter to find a mixture of dyes or organic chemicals that will fill the bill. König's statement that the substratum is stained is not quite sound, this is far more likely to be the absorption of the dye by the surface of the celluloid itself, which is etched by the substratum.

WATERPROOF GLUE — This may be useful to some one it was used for gluing up propeller blades during the war with remarkable success:

Casein	100 parts
Freshly slaked lime	18 parts
Caustic soda	11 parts
Sodium fluoride	3 parts
Paraffin oil	1.5 parts

These are mixed dry and are prepared for use by mixing with from 200 to 250 parts of water. The caustic soda should be 95 per cent pure (*Chem. Age*, 1922, **30**, 103).

SOFT FOCUS LENS — R. Namias recommends a plano-convex lens with an aesculin filter coated on the plane surface, for portraiture. The working aperture is approximately *f*:5 and the image is said to be less fuzzy than with ordinary lenses, due to the absorption of the ultra-violet by the aesculin filter. After focusing, the extension of camera has to be reduced by 1-30 before exposure of the plate, so as to bring the same into the plane of actinic focus. The image is sharper than with two plano-convex lenses with a yellow filter (*Il Prog. Foto.*, 1922, **29**, 8; *Sci. Tech. Ind., Phot.*, 1922, **2**, 34). Possibly the plano-convex lens is suggested merely to provide a plane surface on which the filter can be cast. It certainly is not the most suitable to give the sharpest image, because of its great spherical aberration, though this is reduced if the convex surface is presented to the incident light. The best form of lens, in so far as spherical aberration is concerned, is the Herschelian, in which the front lens is a crossed convex with radii in the ratio 1:6, with the side of greater curvature to the object, and the rear lens, which should touch the other lens, is a deep convex meniscus. This has the least aberration of any lens combination. Two plano-convex lenses with their convex surfaces facing each other have a spherical aberration of 5.67, whereas the single plano with the convex side to the object has only 1.17.

AN ALUMINIUM FILM. — M. Wrenthem has introduced a cinematograph film on an aluminium base. The main purpose of this is, of course, as a protection against fire, and it is only to be used for the positive, not for the negative. The surface of the metal is slightly grained like that of an irregular grain half-tone screen, and it can be coated with emulsion on both sides. Obviously the pictures can only be shown on the principle of the old aphengescope, that is by reflected light, and the loss of light is stated to be only 8 per cent more than with transparent celluloid. The great advantage is its price, as at the present time celluloid base costs 12.20 marks per meter, while the metal film coated with emulsion, costs one-third less. The weight of the film is one-third more than celluloid and its thickness is 0.15 mm. When projected the shadows are reported to be rather heavy and without detail, and with large screens the granularity was apparent in the highlights (*D. R. Pat.* 284 630; 301,108, 1910. *Phot. Ind.*, 1922, 311). F. de Mare (*Eng. Pat.*

20,836, 1907) proposed to use metal films and E. Dupuis (*Eng. Pat.* 23,688, 1910) patented the use of metallized paper.

HOME-MADE PAPERS—G. Jansen recommends the old method of preparing paper, which was the original mode of making solar prints. A salting solution is made as follows:

Gelatine	7.83 g	30 gr.
Ammonium chloride	2.61 g	10 gr.
Ammonium bromide	2.61 g	10 gr.
Citric acid	10.44 g	40 gr.
Sodium carbonate, cryst	10.44 g	40 gr.
Water	1000 ccm	8 oz.

Soak the gelatine in one quarter of the water for 2 hours, then add the remainder and dissolve by heat, and add the salts, the citric acid last, and filter through canvas. Float the paper on this for 2 minutes, avoiding air bubbles, and dry not too rapidly. The sensitizer is:

Silver nitrate	125 g	480 gr.
Acid tartrate	15.66 g	60 gr.
Water	1000 ccm	8 oz.

A deposit generally forms, which should be filtered out. Float the salted paper on this for 2 minutes and dry. Printing should be carried out by any light until a faint image appears, then apply the developer as with platinum paper and then completely immerse it. The developer is:

A.

Acetate of lead	125 g	2 drachms
Water	1000 ccm	4 oz.

B.

Gallic acid	4.18 g	16 gr.
Water	1000 ccm	8 oz.

Add acetic acid a drop at a time to A until the solution clears up. For use take 96 minims of A, 1 ounce of B and distilled water 8 ounces. As soon as the print has gone as far as it will in this, an intensifier is applied, which is A solution 120 drops, B solution 2 ounces, acetic acid No. 8, 80 drops. This should be poured on and off the print. The image passes through light-red, brown, sepia to intense black, and the process may be stopped at any point. Wash in three or four changes of water and fix in 10 per cent solution of hypo. For sepia and browns use A solution 20 minims, gallic acid B 2 ounces, acetic acid 80 drops, sensitizer 20 drops and allow toning to proceed beyond the desired point. Another process given for obtaining Bartolozzi red tones is to float paper on a saturated solution of potassium bichromate for 5 minutes, dry and expose until the shadows come out red on the back of the paper, wash till the whites are clear and then immerse in:

Saturated solution mercurous nitrate	4 parts
Saturated solution potassium bichromate	1 part
Water	28 parts

Make this up at least 3 hours before use and a day is better. It should be a light green tint. Immerse the dry print face downwards until the desired tint is reached. A beautiful brown tint may be obtained by immersing the mercurialized print in 1 per cent solution of ammonia and toning with a 2½ per cent solution of gold chloride. (*Camera*, 1921, **25**, 305). This seems a rather curious haphazard process. In the first place if the sodium carbonate and citric acid are added to the gelatine solution there will be vigorous effervescence and the froth produced will be very great. Tartrate acid is presumably tartaric acid, and why this should be used is not clear as silver tartrate is very slightly soluble in water, about 2 per cent, so that the precipitate formed would merely mean reducing the strength of the sensitizer, and the formation of a little nitric acid
method would seem to be to use
add nitric acid. Certainly the
of the sensitizer, which is laud
due to the nitric and not the
author admits the fugitive char
prints and there is no doubt th
permanent prints. In all pr
chromate is found, and this ma
comparatively insoluble mercur
the bulk of the image is a merc
would be of course, some slig
action of the exposed chromat
and it is extremely unlikely tha
to obtain a permanent print.

BLACK LINE PRINTS — To ob
ductions it is recommended to
mixture of:

Gum arabic	
Water	1000
Potassium bichromate	4 t
Alcohol	1

Brush the solution over the
moderate heat. Expose under
5 minutes in the sun, and wash
in the dark and then brush ove
orange shellac in alcohol, to w
some lampblack. Then remov
cent. sulphuric acid bath and
5 minutes. Then take a spon
over the print, which should b
until the ground turns quite w
25, 384). This is Itterheim's
patented in *D. R. Pat.* 10,443, 18
measures is given the original f
seen to differ from the prese
shellac solution was made wit
absolute alcohol, 100, and 15 p
lampblack. This was given in
was patented again by Fiorell
1907), by Baron in the same y
ment of the gelatine by fish glu
(*D. R. Pat.* 139,555, 1904) fo
Now it crops up again without

FLASHLIGHT IN NATURE PH
Wilkinson in a recent lecture
gave a very interesting accoun
with flashlight in securing ne
life in the shape of butterflies,
Starting with his lens working
it was possible to stop down in
thus obtaining very much grea
important point in all such wo
contrasts a K-1 screen was u
subjects, on anti-screen plat
matic plates either a K-2 or K-3
in the former case a charge
powder was used at *f*:23 and 6
life-size reproduction. Electri
the only satisfactary method;
powders cannot be exposed un
as they are more or less delique
that keeping the powder in so
gently heated and closed, the
thrown back like the head of
time of electrical firing, is alm
color slides were shown and th
life size with lens stopped down
of 20 grains of Johnson's Prof
with Ilford panchromatic plat
173).

NS and ANSWERS

TION. — J. V. A., Columbia, Mo.
tly talking with a gentleman who
ss of producing colored lantern
hing through a screen laid off in
squares being tinted with the
stated that it was an old process
y practical. I must confess that
ollection of reading something
this kind in the magazines, but
you have any literature on this
me any information, I shall be
you. *Answer.* In the Auto-
light passes through a screen
ribe, the screen and the sensitive
mbined on one plate. In the
screen and the photographic
together in contact. Mr. Wall's
otography in Natural Colors,"
blish very soon, probably would
overs all the processes of color
ompletely.

AL VISTA PANORAM CAMERA.—
, Sask. — wants to know how he
et the Actinometer time using
the Al Vista 5B Panoram. The
. S. 8 — 16 — 32 — 64 — 128 and
through the R. R. lens passes
t hood which covers half an inch
, this hood is 1¾ inches from the
4¼ inches from the film, the lens
12 inches of film. The speed is
firmly set or lightly set and a
be made by placing another fan
which has slots for that purpose.
ollows —
inches of film in 5 seconds.
inches of film in 15 seconds.
inches of film in 20 seconds.
inches of film in 25 seconds.
inches of film in 30 seconds.
to purchase a book on exposure
ke a print, turn to the book, and
ther his print was a little over or
rrect so that one could be positive.
rint? *Answer.* We are sorry to
e you a very definite answer to
how you can get the actinometer
ne meter and the AlVista camera.
a is no longer on the market and
sm is of a kind that could not be
lutely accurate. The regulation
peeds by means of fans was
s a device that would naturally
nism became worn, so all we can
only way you can ascertain the
is by trial and error. You will
utter at different speeds and find
eriment how near they come to
th regard to a book on exposure,
with cuts showing under and overexposure, we are afraid you never will be able to purchase such a book as it would be very hard to show this by means of half-tones. Probably our little book, "The Secret of Exposure," would help you. The price in paper covers is 50 cents, in cloth, $1.00.

EQUIPMENT FOR PROFESSIONAL WORK. R. W., Shawneetown, Ill. — writes—I have been developing pictures for the past four or five years and am thinking of putting up a studio. I would like to have some advice as to the kind of tanks to use and the best kind of developer. *Answer.* Commercial finishing plants usually are equipped with tanks made of acid-proof stoneware, made in one piece, without joints. Sometimes metal tanks, nickel plated, are used, and tanks made of wood, white pine or cedar, are thoroughly practical. The size of the tanks of course depends upon the amount of work you contemplate doing. The tanks must be deep enough to accommodate the longest films — they are usually from 42 to 50 inches deep. The breadth and width of the tanks may vary according to the number of films to be developed at a time. You will find a good formula for tank development of roll films on page 268 of the issue for April 1922. This is the Ansco formula and is given for quantities of from 1 to 40 gallons. You can buy tanks from Eastman Kodak Co. or from Burke and James of Chicago, or, if you decide to use wooden ones, you could make them or have them made locally.

LIST OF BUYERS OF PHOTOGRAPHS. — J. W. M., East Hamilton, N. Y., asks — Does your book, "Cash from your Camera," contain a verified list of the principal print buyers? If not, can you inform me where I can purchase such a list? I am a commercial photographer and have many prints which I think would be salable. *Answer:* Before we published the list of print buyers in "Cash from your Camera," we sent out letters to everyone of them asking for full details as to the kind of pictures, size, price, etc. and we included in the list only those whose replies were favorable. In this way we obtained the "save-your-postage" list which includes those from whom our letters were returned, who had moved away, or who answered the letter and gave us a reason why they did not wish to have pictures sent to them. We believe those lists are quite dependable. We do not believe there are any other such lists published, but are sure that ours is the most recent and up to date list of this kind.

FORMULAE FOR DEVELOPING ROLL FILMS AND PLATES. — H. W. H., Peoria, Ill., asks for a good Elon-hydrochinon formula that will make up about 16 ounces of developing solution for tray development and also a formula for metol solution to make up about 16 ounces. Both of the above formulas to be used in developing roll film and plates. In copying photographs, does stopping down the diaphragm increase the sharpness of the negative? *Answer.* There is a good Elon-hydrochinon formula on the label of the bottle in which you get the Elon. Here is a good, average metol-hydrochinon formula for films and plates —

Metol	15 grains
Sod. sulphite	1 ounce
Pot. bromide	5 grains
Pot. carbonate	1½ ounces
Hydrochinon	60 grains
Water	20 ounces

Stopping down does not increase the sharpness; it merely increases the depth of focus, that is to say, it helps to bring things into sharp focus that are in different planes, close to the camera and far off. In copying the image is in one plane only and if the lens is a good one, that is to say, one that is corrected for the usual aberrations, the negative can be made sharp without stopping down. If the lens is a rectilinear or a cheap grade of anastigmat, stopping down would help because it would tend to eliminate any faults in the lens, such as spherical or chromatic aberration, astigmatism, and so on. When stopping down does not cause any serious inconvenience, it is a good thing to do so in copying, except when using a high grade anastigmat with a flat field. The only serious objection to stopping down is that it lengthens the exposure and if there is likely to be any vibration of the camera a long exposure should be avoided.

PIN HOLES — E. B. E., Glendale, California, writes:— On page 331 of the May issue I notice a question from M. F. C. of Rochester, New York, under Questions and Answers, that takes me back to the time I struggled with the same trouble. It was not all dust I found, and possibly he may be getting them as I did. My plates were tank developed and every once in a while they would have a beautiful crop of pin holes. The answer was simple when I found it. When the plates were immersed in the developer, a family of bubbles attached themselves and of course resulted in a convention of pin holes. The remedy was to move the plates up and down in the tank rapidly a few times to dislodge the bubbles and allow the solution to cover all portions of the plates completely. If M. F. C. uses a tank, this information ought to be helpful.

DIFFUSION BY SEPARATION. NEGATIVE REDUCERS —F. R. S., Braman, Okla., writes as follows: — I am using an old Darlot of about 10 inches' focus, 2⅞ inch lens diameter. The front combination slides out of the barrel so as to allow the diaphragms to be inserted. What I want to know is what effect there should be by not putting front combination clear in? It does not seem to have any effect. This lens works fine wide open up to full cabinet, soft and speedy. Of course, stopped down for 10 x 12, it is wiry. There are marks on the barrel that lead me to think that by separating the two lenses more in making a group, I might get some diffusion. Your book on lenses may tell me and any advise from you will be thankfully received. I enjoy your magazine, it is a real one. Is that "Negafake" pencil any good or is there something better? I have never done any knife work but am getting along where I need something in that line. *Answer*.—Your old style Darlot lens probably is one made on the Petzval principle in which the separation of the components is not an important matter. You will find that increased separation gives some diffusion. This is the principle that is used in the Cooke Diffusing lens. Negafake is good. It is used almost exclusively in England and has considerable sale in this country. There are other things for the same purpose, such as the "Hi-lite" reducer made of fine spun glass in a metal sheath. Whether or not they are better is a matter for personal opinion. You would probably find that any one of these things would answer your purpose very well when you have acquired sufficient skill in using them. They are easier to use than a knife, but there are occasions on which a very sharp knife, such as a
safety razor blade, will do what
than any of the abrading pencils.
with all of these things will ena
the ones that suit you best and a

DIRECT POSITIVES ON PAPER.
A. M. E., Roxborough, Phila., as
follows: — I have just purchas
book, "Photographic Amusemen
ested in making direct positive
camera. I tried the thiosinami
and combined with ammonia.
with an M. Q. developer, but coul
Will you please answer me the fol
1. Can you make direct positive
paper? If so, please state the
has to be done to cause the
thiosinamine be used for paper
Answer.—You can make direct
not by the method referred t
Amusements," however, but by
has been advertised in the phot
for the past few months and it is
making positives on paper. T
be used for papers and, anyway,
calls for a lot of experience. It
practical process, but is more
anything else. Try Direx and l
get along.

FORMULA FOR TANK DEVELO
Rio de Janeiro, writes:— I would
give me through the medium of
a formula for a developer for fil
(similar to the many finishers
U. S.) one that will keep well in
white as to character of negative
the addition of a little formalde
the latter not essential, howeve
where water is scarce, too, and i
on the subject of quantity
difficult or unusual conditions,
you would mention some. A
formula for tank developmen
April issue on page 268 is as g
With regard to the addition
would not recommend this wit
inary testing. It would be bett
separately instead of adding it t
do not know of any books deal
of quantity development under
If water is scarce, probably th
some similar preparation would

CAMERA FOR STAMP PORTR
Paterson, asks several question
the book "Photographic Amu
Woodbury. Kindly give the f
Where can the special camera be
"stamp" portraits, also "Na
scope." I would be pleased to h
tion along this line. I have a p
as a "live portrait," "living pi
eye portrait" and I have infor
portraits" are made, but ce
required. The portrait is held
change expressions. No light
made similar to the ones desc
Woodbury. I would thank yo
that you can render. Perhap
enlightment. Kindly reply f
thank you. *Answer*.—We th

camera for making "stamp portraits" from George Murphy, Inc., 57 East 9th Street, New York. The apparatus described as Nadar's Chromoscope is not on the market, but an instrument that would answer the purpose could easily be constructed. With regard to "pictures with eyes that open and shut," all the information that we can give is to be found in Woodbury's book.

Exposure — O. G. O., New York, writes:— Recently I purchased a timing meter made by Adams and Co., London. The use of this device has enabled me greatly to improve my results. I am an amateur. Have been using a 3A Kodak equipped with 3¼ x 5½ B. & L. Zeiss Tessar, Series IIB. As a result of reading of the advantages to be obtained in composition, I some time ago purchased a 3A Graflex, having 5 x 7 B. & L. Zeiss Tessar, Series IC lens. I am unable to get good results with the latter because I do not know how to time the exposures as I do when using the Kodak. Will you be kind enough to explain the matter to me. *Answer.*—The question of exposure of the film is the part of photography that needs considerable thought, but it is not difficult when once the controlling factors are classified. The speed of the lens varies according to fixed laws and no judgment is needed for that, only knowledge of the fixed laws. The speed of the film does not vary sufficiently to make any appreciable difference as long as you stick to the same kind. The other factors — light conditions, time of day and year, character of subject, etc., depend partly on judgment and partly on knowledge. The best thing we could recommend you to do is to get a copy of our little booklet — "The Secret of Exposure" and study it carefully. The price is 50c. in paper and $1.00 in cloth binding.

Water on Paper and Films — L. R. S., Pensacola, Florida, sends us the following helpful hints:— The following will, I hope, be of interest to someone who has had the same trouble that I have and has not yet found a remedy. If you think it is worth publishing, please do so. I, like some camera nuts, am forced to do all my developing, printing and enlarging in one little cubby hole, therefore I have, now and then, spoiled a few sheets of undeveloped paper or a dry negative that I wanted badly by a drop of water or developer coming from my hands which I was *positive* I had dried thoroughly before I handled the dry paper or negatives. I later found that although I had dried my hands, there was still water around the set of my ring. After removing the ring I had no more trouble of this nature.

Bubbles in Lenses — J. B., Homestead, Penna., asks for information regarding Anastigmat lenses. I have noticed, he writes, that in some of the anastigmat lenses, there are little air bubbles. Are these lenses perfect, having the bubbles in them, or should they be perfectly smooth, without a mark? *Answer.*— You need not be at all concerned about the bubbles in anastigmat lenses. They are very often seen in the best lenses and they are no detriment at all. Their presence never causes a loss of light greater than 1-50th % and they do not harm the optical efficiency of the lens at all. In the last few years, opticians have been working to improve lenses as regards the higher optical properties and this has involved the use of glasses that are very different from the crown and flint glasses hitherto used and still used for commoner types of lenses. There are great technical difficulties in making such glass and freedom from bubbles is almost impossible to obtain. They do not do any harm and therefore no great effort has been made to find a way of getting rid of them for there are so many other problems in lens making that are more important.

Developer for Films and Paper. Dr. W. A. H., Morenci, Mich., asks:—What is the best developer to use for 4 x 5 films and also for paper? I am using a 4 x 5 film pack, Seneca camera. How long must I give an inside exposure for a good picture? I am just a new man in the business of photography and want to learn a few things. *Answer.* A standard metol-hydrochinon developer is as good as anything you could use for films or paper prints. Here is a formula:

Water	20 oz.
Metol	20 grains
Sodium sulphite	1½ oz.
Potassium bromide	7 grains
Hydrochinon	50 grains
Sodium carbonate	1½ oz.

This can be used just as it is for the development of prints on D. O. papers and should be diluted to about half strength for films. Probably our little book, "The Secret of Exposure" would help you in your desire to learn a few things. That takes up the matter in fuller detail than we could go into in a letter. The price is 50c. in paper covers and $1.00 bound in cloth.

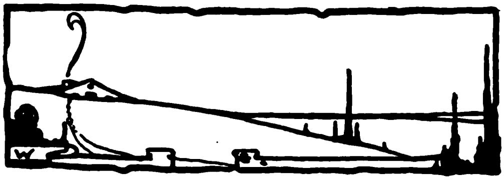
Camera for Taking Pictures While Hunting and Fishing. —T. R. T., Schenectady, N. Y., writes: — I am greatly interested in getting a camera suitable for taking pictures while hunting and fishing. What sort of camera do you recommend for this work and with what lens? I had in mind a 2¼ x 3¼ vest pocket camera and a *f*:4.5 lens. I have also been considering a Graflex, 3¼ x 4¼, with revolving back and *f*:4.5 lens. I wish you would criticize these two cameras for this work and advise me what type of camera you would get if you were getting one for this work. What type of camera do your friends and acquaintances who are hunters and fishermen use? *Answer.* Of course the Graflex camera has advantages that the vest pocket camera has not, the most important one being the possibility of examining the picture on the focusing screen, full size and right way up, before making the exposure, but, in spite of this, we think you would do better to select the vest pocket camera for a hunting and fishing trip because of its superior portability. The writer has used a 3¼ x 4¼ reflex camera on mountain climbing and camping trips and is of the opinion that its advantages do not make up for its bulk and weight. We would recommend the vest pocket camera, but this is just our own opinion and if you have means of transporting baggage on these trips, you may not mind the bulk and weight of the more efficient camera.

Hypo Remover— Messrs. Howe and French, Inc., write us in answer to a letter regarding the price of Chloramine T: — We are able to quote you on Chloramine T, in lots of 1 to 5 pounds, at $3.50 per lb., f. o. b. Boston: in larger quantities at proportionate reduction, until we reach 100 pounds, which is the maximum which we now offer at $2.00 per pound.

Lamp House to be Attached to Camera — A. C. O., Maskawata, Manitoba, writes:— I have a Ross half-plate camera (4¾ x 6½) with all latest improvements and adjustments; reversible back, swing back, rising and cross front, removable lens board, etc., Thornton-Pickard roller blind shutter, Zeiss Tessar *f*:6.3 lens, and I would like you to give me a design for a lamp house to be attached to rear of my camera and equipped with an acetylene burner, etc., so that I can do my enlarging at night. As I mostly use Artura Carbon Black for enlarging, will the acetylene flame be strong enough? Would one or two pieces of ground glass serve as condensers and how large would the condensers have to be? *Answer.* The Kodak Co. have an enlarging outfit that can be attached to a camera, and there is one called the Craig Enlarger that is used in a similar manner. These are designed for electric light, but if proper provision were made for ventilation, no doubt an acetylene lamp could be used instead. Why don't you write to some big dealer like Willoughby of 110 West 32nd St., New York City for full details as to what is available? We rather doubt whether you would find anything that would fit your half plate camera without special alterations; that is a size that is very seldom used in this country.

AMIDOL FORMULA. DURATOL. — Dr. L. G., San Antonio, Texas, asks for an amidol formula for tank development adjusted to the time tables as given on the Thermo development chart. Can Duratol be had in this country? If so, kindly advise who handles it. *Answer.* Amidol is a developer that is not at all suitable for use in a tank because it oxidizes too rapidly and does not work well unless it is freshly mixed. The usual method of using amidol is to add the dry powder to a solution of sodium sulphite just before using and not try to keep it ready mixed. Duratol cannot be obtained in this country; its importation has not been licensed.

SENSITIZING SATIN. — L. R., Cincinnati, Ohio, writes:— Can you give me a formula for a sensitizing solution which can be used to make enlargements on satin, being at the same time about as fast as bromide paper and working like a developing out paper instead of printing out paper? *Answer.* It is not possible to coat satin with a photographic emulsion. Silk and linen or cotton fabrics can be coated with a sensitive emulsion for developing out or for printing out, but not satin. Possibly you could transfer a carbon print to satin, but this is merely a conjecture on our part and we do not speak from experience.



LOCAL MANIPULATION

Sometime, if my natural bump of benevolence does not keep me from it, I am going to write a book on "Curiosities I have Known." I have, in fact, been on the point of doing it several times already, but have been stayed by the memory of what has happened on previous occasions when I painted a burlesque from life. The original of one such burlesque in particular was promptly recognized by mutual friends, and for months I lived in fear lest they should thus destroy a friendship which I valued, besides winning for me a reputation as a serpent in the bullrushes. Happily, however, they were as unwilling as I to disturb the equanimity with which he moved among us, and so even to this day he does not know that for a paltry mess of pottage I had held his foibles up to the ridicule of his fellow-creatures.

Yet the people by whom one is surrounded, and whom he encounters in his daily combat with the world, are so curious a collection, each with so many ridiculous traits in his make-up, that the temptation to touch them off in print is not unnatural.

What gave rise to this train of thought is the recollection of a visit which I paid the other day to the "gallery" of a local photographer. I say "gallery" advisedly, for not by any stretch of imagination could it be called a "studio." It was a gallery — I might almost say a rogue's gallery, if the general effect is anything to go by, for along the walls hung a fearsome collection of most villainous heads (photographically speaking), men and women of the rough-and-ready eighties or early nineties, with chop whiskers, river-rat mustaches, dinky hats, clothes that might have been cut by a blacksmith and fitted by an idiot, and eyes in which lurked the most devilish abandon it has been my lot to observe in likenesses of human beings. The description, it is true, is a bit confused. The women did not have mustaches or chop whiskers. However, for sheer ferocity of expression I really believe they had it on the men. Women often do, you know, when you get right down to cases. Women can be mighty rough when they want to. Personally, I don't like them under such circumstances, but everyone to his taste. However, that's neither here no there.

This gallery that I started to tell about was up on the top floor of an old ratty store building on one of the side streets. It must have been there a long, long time, though not so long as I at first surmised, for I learned on inquiring that the building was erected in 1845. Probably the gallery was opened the following year. In fact, recalling the portieres which draped the windows in the tomb-like carpeted main room, I am sure of it. These portieres were a murderous red on the inside, and on the outside, where they caught the sun, were a sort of brindled lemon color. I can imagine that in the old days, when it was needful to clamp the victim's head in a vise to keep him quiet, these portieres and the direful array of heads hung so viciously about must have helped to subdue the spirits of the too vivacious patron to a marked extent. This was in the days before anesthesia, and I suppose something had to be done.

The photographer who haunted this gallery was not apparently a very old man, at least so far as age is numbered by years. He had achieved perhaps the advanced age of fifty. His appearance of comparative youth, however, was evidently due to the fact that on purchasing the gallery some twenty-five years ago he had been hypnotized by one of the "portraits" on the wall, thereby losing his capacity for later growth. True, he was no longer using wet plates, or albumen paper, but except for a few trifles of this sort he seemed unaware that photography had progressed of late years. Indeed, he was rather of the opinion that it had gone very much to the dogs.

As for myself, I had forgotten that such galleries still existed, or perhaps I should better say still remained, for to exist in them must be difficult indeed. It gave me a queer feeling to find this bit of the musty past trying to hold up its head in the busy turbulent present, yet apparently unaware of the ludicrous picture it presented to a modern eye.

THE INTENSIFIER.

THE QUESTION BOX

BEST ANSWER TO JUNE QUESTION FOR READERS

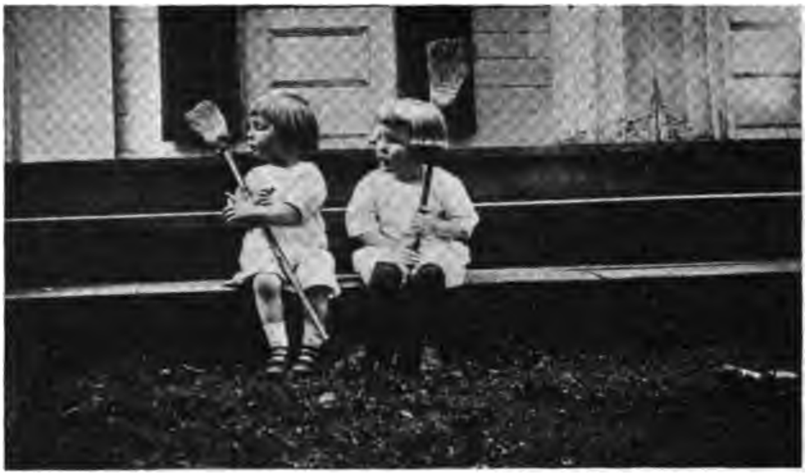
What is a combination negative, what is its use' and how is it made?

Possibly a good way to answer this question would be by describing two composite negatives which I recently made.

A friend showed me a 2¼ x 3¼ snapshot of a small boy taken on the Atlantic City boardwalk. It was a fine picture of the boy — good expression and pose and sharply focused — but behind him stood his mother in a shaggy fur coat, her beaded handbag apparently dangling from the boy's hand, her skirt fringes showing between his legs, and, — she was exactly decapitated by the top of the picture. To either side showed the boardwalk railing and the breakers in the distance. She was highly provoked that she had not stood to one side when the picture was taken and from one print had cut out the figure of the boy and pasted it on a card, but was vexed that this did not show where he had been when photographed. I asked her to lend me the negative. I made a sharp 5 x 7 enlargement on glossy paper, making the figure of the boy 5 or 6 inches high. I carefully cut out the image of the boy, turned him face down on a sheet of glass, and rubbed his edges thin with fine sandpaper. Knowing about where the picture was taken (or at least selecting a spot on the boardwalk where the ocean was about the same distance from the walk as it appeared to be in the original picture) I waited until the lighting was about what it seemed to be when the snapshot was taken and then photographed the bare boardwalk with the railing and ocean in the background. I used a 3¼ x 4¼ plate and held the camera at about the same height from which the first picture was taken. This negative I enlarged to 8 x 10 on the same grade of paper as was used for the first enlargement. I had cut a vertical strip from one edge of the first enlargement, showing the railing and walk, and by pinning this to the easel I was able to so arrange the second enlargement that the bars of the railing were the same height from the flooring as they were in the first enlargement. This was so that in the final picture the child would bear the same relative height to the railing as he did in the original print, thus neither dwarfing him nor making him appear too tall. I pasted the cut-out figure on the second enlargement with Grippit, allowing the adhesive to freely squeeze out from under the edges. This was easily rubbed off the glossy paper with the ball of the finger without marring the surface. There had been a dull light when the original picture was taken, so there were no dark shadows of the child on the boardwalk to take care of, — just a little shadow on the boards at his feet. These I put in with a soft pencil. A copy negative was then made from the composite print and an 8 x 10 enlargement on matte bromide made from this negative. The mother to this day does not know how I got rid of her or how I showed the railing and ocean through her. In addition to the elimination of the adult figure, the final enlargement was superior to the first because the original picture was taken with a camera with a short-focus lens and the boy, railing, and ocean were of almost equal sharpness. My photograph of the boardwalk was made with a longer-focus lens and large aperture and focused sharply on the boards about where the boy stood, thus slightly throwing the railing and, still more, the ocean, out of focus. This made a separation of planes in the final picture, and the boy stood out from the background with quite a stereoscopic effect and yet seemed to be firmly standing on the sharply focused spot on the walk. There was absolutely no sign of faking nor any perceptible grain.

The second negative that I shall describe was made along the same general lines as the first, but the events leading up to it may be of interest. A year or more ago I made a fine 3¼ x 4¼ negative of an exceedingly good sunset over water with a strip of beach in the distance. Unfortunately there was a most unsightly clump of black piles and a jagged cross-piece in the middle distance — remains of a burned pier — and there was no point from which I could get the clouds without including them. I tried to retouch them out of the negative, but with poor success. I could get them so that they would scarcely show in a contact print, but they loomed up badly in an enlargement. I entered a 10 x 12 in one of AMERICAN PHOTOGRAPHY'S monthly contests. It was promptly returned, — possibly on account of those stumps. If I had been one of the judges I should have voted against it myself. I stuck the picture away, thinking that some day I would make an enlarged negative from a contact positive, retouching as I went along, but forgot all about it. A few months ago I was glancing over one of my albums of prints and my eye lighted on a small print of a catboat taken some four years ago. It occurred to me that this boat, having been taken against a faint sun and in the proper position with regard to the wind and set of sails, would have looked well in my sunset picture. I ripped the print out of the album, cut out the boat, and pasted it over the stumps in my sunset enlargement in the manner described above. I cut through the ropes which showed against the sky, and when the boat was in place on the enlargement, I replaced them with pencil lines and rubbed in shadows with a soft pencil. This I copied and enlarged to 10 x 12 on Artatone, which I sepiaed and gold-toned to crimson. It took a prize cup in an exhibition. There was no evidence whatever that the boat was not in the original picture. An amusing incident occurred. The young lady who owned and sailed the boat saw and recognized it when the picture was on exhibition and struck me dumb by telling me that she remembered sailing the boat in that location at about the time the sunset picture was taken.

The first example shows what can be done in removing or altering an entire background, while the second shows how a single feature in a picture can be altered. — WM. JORDAN., JR.



SEE WHAT'S COMING *New Readers' Criticism Print No. 33*

ANOTHER ANSWER

A combination negative consists of a number, or portions, of different negatives fastened to one large negative in such an order as to result in artistic compositions, and is used in place of combination printing. It has many advantages over combination printing, because when the combination negative is once made, it may be printed from just the same as any other negative and does not require the numerous and bothersome maskings as in combination printing; and then, more evenness of tones and contrasts may be obtained than in the latter process. However, a combination negative has its drawbacks also, in that it is very hard to make and requires careful and painstaking work, and sometimes it is impossible to make one, but where, as in most cases, it is possible to make one, many beautiful and artistic scenes as well as humorous ones can easily be secured.

As to making one, take, for example, a landscape with a pretty country road surrounded by some barren scenery in which you want to insert a country church and a figure. First obtain two negatives of the church and figure on the same scale and with as near the same light conditions and exposure as possible. After developing them, compare their tones with those of the plate they are to match and retouch them until the tones on all three negatives or plates are fairly equal. Next strip the film from the two negatives just developed, and carefully cut out the figure and building, and also on the original negative (preferably a plate) very accurately cut out portions of the film in the exact shape of and positions where the two objects are to go. Then lay the original plate film side up in a tray of water and carefully float the figure and the church onto the plate in their respective positions. This may sound too hard for some readers, but if they will try it a few times with some old negatives, after a while they will not find it any harder than doing many other things which they have mastered, and if rightly done the results that are possible will pay extremely well for the work that is done. — WARWICK B. MILLER.

SEPTEMBER QUESTION FOR READERS

What type of negative is best suited to enlarging?

For the best answer to this question received by October 15 a credit of $2.00 towards books of our publication will be awarded. Address the Question Box Editor, and write any other communication on a separate sheet of paper.

READERS' CRITICISMS

BEST CRITICISM OF PRINT NO. 30

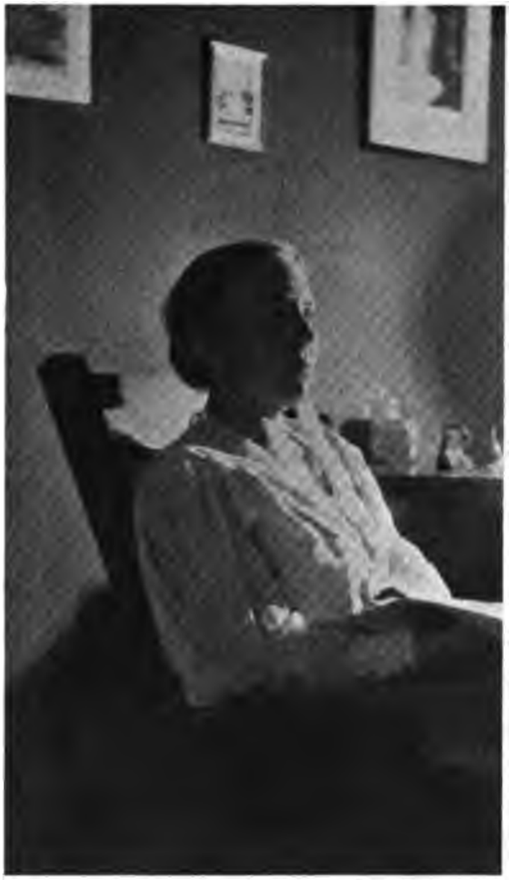
If W. O. Williams reads this, I'd prefer having it called suggestions rather than criticisms, as the print recalls some of my earlier attempts at indoor work.

The lighting is too harsh. A white sheet or other light diffusing screen placed over the source of light would have greatly improved the poor rendition of the shadows. So much for the source of light.

A screen of cloth or even a newspaper would have helped to illuminate the side away from the light and should have been used, as a reflector of some sort is better than none at all.

The position of the sitter in the picture is too far forward, which brings the head on the vertical center line of the picture space. The sitter appears to be ready to leave the picture.

The general reclining posture is fair, although the one photographed should have turned toward the camera a little more, as there is a starey, rigid position assumed. I can imagine the photographer saying, "Now look at this and don't move," and he immediately points to an object on the wall, and when all is set holds the bulb for insufficient time.



Criticism Print No. 30
THE WAY I LOOK W. O. WILLIAMS

Then too, those pictures on the wall fail to add balance to the picture. They are distracting elements and should be removed or so placed that they merely add to the homelike effect. One picture would be sufficient. I'd suggest that the little one in the middle be used, placed a little farther to the right. The pictures either weren't hung straight or else a lens of far too short focus was used in making the picture.

Now to sum up quickly the faults:

First: — Too harsh and contrasty a print, due to (a) poor lighting; (b) too long a development of the negative, or (c) too contrasty a paper for the print.

Second: — Posture of sitter too stiff and fixed. Portraiture should reproduce the features in a pleasing way, without too much detail or detail in surrounding objects.

Third: — Position of sitter in picture space too far forward.

Fourth — Too many distracting elements visible.

That's enough!

I would like to see this picture retaken and a little care used in the lighting and arrangements.

It seems as if W. O. Williams didn't put enough of the personal equation into the task — but lightly took what might have been a good picture or portrait. — F. B. MARCHIATETTE, 1504 Fullerton Ave., Detroit, Mich.

OTHER CRITICISMS

This print is typical of what an indoor portrait should *not* be. If there's one thing that will fool and mislead the amateur it is the intensity of light indoors. Outside, the light comes from all directions and consequently shadows are well illuminated, although in comparison to direct sunlight they may appear quite black. Inside we usually have the light coming from one or two directions and unless we take the precaution to use reflectors our shadows will be dark indeed; in fact, the ratio of the shadow and highlight intensities will be greater perhaps than those out-of-doors. One must not depend too much on the eye, as it sees the subject *in toto*. The eye has an adjustable diaphragm, or iris, which automatically takes care of different intensities and it is only by long training that the conscious process will give the correct estimate of light and shadow relations. The safest way is to use the ground glass and black cloth. Or, if that is impossible, look at the subject through nearly closed eyes.

The main faults with this print are: foreshortening, harsh lighting, and poor composition. The pictures hanging on the background are too light to be unobtrusive; they can be trimmed off entirely to advantage. The light was not diffused sufficiently and as a result we have inky shadows which upset the balance, for the subject has no visible support.

Was a profile desired? The head is turned too far to the right for that, and not far enough for the Rembrandt effect. The articles on the table are distracting and the camera was placed too near the subject for proper perspective.

Some good book on portraiture and systematic experimenting are the best suggestions for improvement. — GEORGE A. BEANE, JR.

Mr. Williams evidently made this print as an experiment in lighting with a single low power light. It is quite possible to obtain a pleasing result under the light and with the outfit Mr. Williams used, but one must understand such a light.

This print contains six prominent mistakes.

1. The unnecessary inclusion of pictures (no excuse for this).
2. The out of place articles on the table (no excuse for this).
3. The prominent chair back (no excuse for this).
4. The too low lighting, which is too close.
5. The dark shadows on the face, which should have been relieved by a properly placed reflector.
6. The unnatural pose, expression and handling of the book. To prove that one understanding light can get very *fair* results under exactly the same conditions as Mr. Williams worked, I have made a portrait under such conditions, only my light was a 300-watt instead of a 200-watt as he used. The camera is a 2¼ x 3¼, and *f*:8 was used, the exposure being 30 seconds. Of course my light was *diffused* and was 5 feet from the subject and 3 feet above the head.

An exposure of one minute would have been none too much. This is the first and only portrait I have made with electric light and it was made expressly to help in this criticism. I admit my effort is not without fault, but considering the small camera used and the long exposure the result was worth while procuring. The print could be made on hard paper, giving more pep and contrast but I detest such pictures. To match Mr. Williams' print, my subject donned a white blouse, although I much prefer a lower-toned garment.

I am not a professional, but simply a lover of the game. — J. T. J.

One of the most difficult things which confront the maker of home portraits is to avoid the well-known picture-taking expression which so many sitters are apt to assume. In the present instance the sitter has a fixed and uncomfortable expression which we imagine would be assumed only when her picture was being taken. Hence, while the picture might represent the general topography of the features, it would scarcely represent "the way I look" at a normal time.

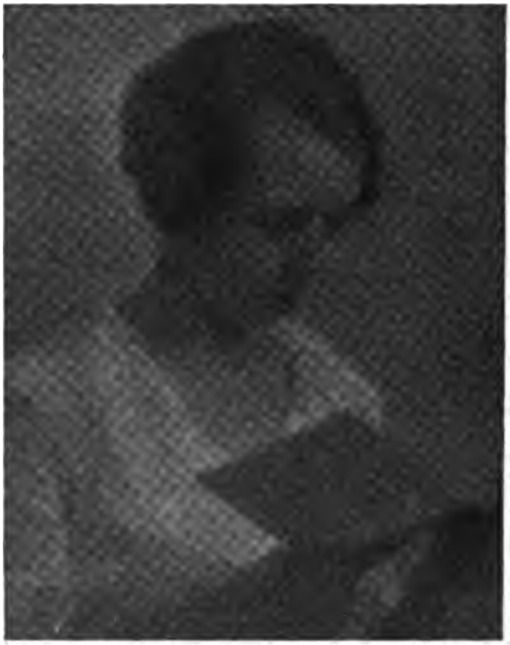
Much less excusable and more easily remedied is the inclusion of the three pictures and the table with its vague suggestion of salt-and-pepper shaker and vinegar bottle. Why include it at all?

The figure is in the exact center but there is room for trimming from the bottom and left to remedy this —Ralph Beebe.

NEW CRITICISM PRINT NO. 33

No data are available for New Criticism Print No. 33, except that it was made with a 2½ x 4¼ roll-film camera and printed on glossy paper.

For the best criticism received from any reader by October 15 a credit of $2.00 towards books of our publication will be awarded. Address the Readers' Criticism Editor, and please write or typewrite on one side of the paper only.



ANOTHER WAY J. T. J.

(*See Readers' Criticisms*)

OUR COMPETITIONS

LITERARY COMPETITION

It has been our annual custom to hold a literary competition, and as this has brought us in the past a number of practical articles, we are repeating our offer this year. For the best article on a photographic subject, whether technical or inspirational, submitted to us before November 15th, we offer a prize of $35.00. We will purchase any other articles submitted which we can use, and we have usually bought about half the articles sent in. The manuscripts must be typewritten, illustrations should be kept to the minimum and diagrams should be drawn in ink neatly enough to be reproduced.

SENIOR COMPETITION

The first prize in the Senior Competition was awarded to Lyle A. Morse for "Nature Study," a very charming nude study in an attractive setting. The decorative quality of the print is much enhanced by the overhanging leaves and the lighting which has been given them. This was taken in Van Cortlandt Park near New York City at 3 P. M. on a September afternoon. It was made with a 4 x 5 Corona camera fitted with a 9-inch Verito lens and the exposure was 1-5 second in good light at stop *f*:5. The Premo Speed film pack was developed in pyro in a tank and printed on Artura Iris grade C.

The second prize was given to "A Meeting" by Jiro Ito, made in Chinatown in the Japanese city of Yokohoma. The quaint costumes and unusual setting help in the attractiveness of the picture, but the posing of the figures is interesting in itself, and the lighting is very well managed. Made with a 2¼ x 3¼ Cocarette camera fitted with a 10½ cm Ic Tessar. The exposure in bright light at 1 P. M. in April was 1-50 second at *f*:6.3. The Eastman Autographic Roll film was developed in a tank in pyro-soda and the sulphide toned enlargement was made on P. M. C. Bromide No. 3.

The third prize was given to Walter Rutherford for his portrait of "Don" made in the rooms of the Toronto Camera Club. This is a charming portrait of an attractive youngster and its rendering in light tones throughout shows great technical skill as well as artistic ability on the part of the maker. Made with a 5 x 7 studio camera equipped with a 14½ inch Verito lens. The exposure was 2 seconds at *f*:5.6 by electric light. The Eastman Portrait film was developed with pyro-metol and the print made on Vitava-Athena Old Master.

Honorable Mentions were awarded as follows:—

In the Land of Atlantide	Paul E. Guillot
Sport	J. W. Jeffers
Curved Shore	Louis R. Murray
Water and Shade	Gregory L. Oliver
All Scotch	J. Herbert Saunders
The Beaches	Henry T. Stephenson
My Godson	B. M. Whitlock

Commendations were awarded as follows:

A Willow-shaded Road	Lawrence Baker
Three of a Kind	A. C. Fawns

Maidens of the Athens of Arkansas	J. H. Field
Jane	Roy H. Heiser
Spring Clean-Up	J. K. Hodges
A Close Portrait	H. M. Hyman
The Shadowed Doorway	Geo. S. J. MacDonald
Song of the Sea	Dr. E. L. H. McGinnis
Tree Study	Walter H. Reuleaux
Spring	J. A. Singler
At this age She dreams of the Prince in a Fairy Tale	Eleanor L. Smith
Toothless	Kenneth D. Smith
From Milking	P. F. Squier
The Observatory	John C. Stick
The Santa Maria	Jas. Thomson
Dominick, the Little Newsboy	Elizabeth B. Wotkyns

JUNIOR COMPETITION

The first prize in the Junior Competition was given to Garnet E. Jacques for his print "When Summer Skies are Blue." Mr. Jacques deserves a prize for perseverance if for nothing else, for he has been sending in prints to our competitions for a long time. The present picture is extremely successful. It possesses an attractive foreground, a strong middle distance and an interesting cloud formation. It shows an attractive piece of nature at a well chosen time. Ordinarily, a light spot at the extreme edge of a picture is not helpful, but in this case the house at the right adds a touch of human interest to the picture which could not be sacrificed without injuring the print. This was made with a 3a Folding Pocket Kodak fitted with a 6¾ inch Zeiss Kodak Anastigmat. The exposure was 1-5 second at ƒ:22 with a 5 time filter in bright light at 3 P. M. in July. The Eastman Speed Film was developed in pyro and enlarged on Eastman Velvet Bromide.

The second prize was awarded to M. W. Ostenveis for "Sunshine" which, though a small print, is an interesting portrait and a pleasing piece of composition. The background is well subdued and the light is interesting. Made with a 2C Kodak equipped with a 5-inch Kodak Anastigmat. The exposure in New York City at 10 A. M. in May was 1-25 second in bright light at ƒ:7.7. The Eastman film was developed in a tank with Eastman Powders and printed on Azo grade 2 F.

Honorable mentions were awarded as follows: —

Nadine	Walter P. Bruning
Kewpie	F. H. Chant
At the Threshold of Spring	I. Higo
The Cabin Porch	Mrs. Ellen C. Hildebrand
Still Life	Koji Hoshii
Southern Landscape	Edwards H. Smith

Commendations were awarded as follows:—

The Valley of Mystic Magic	B. C. Black
Il Penseroso	Ralph B. Bonwit
Italian Sea Coast	Miles J. Breuer
Those Eyes	A. J. Burkett
Waiting for his Master	Horace T. G. Busk
Guardian of the Woods	Franklin Chapman
Medicine Creek	Geo. D. Chase
Shadows & Sunshine	Mrs. Leo Church
In the Hills	E. A. Ellsworth
The Old Mill Pond	Jas. R. Frow
The Bend	Fred Goodin
The Path of the Flier	T. F. Griffin
The Cog Railway	Ralph S. Hayes
Hurry, I'm Going to Laugh	Geo. L. Heatherington
The Lily	Masaru Hiramatsu
Sunset	Harold Isaacson
Along Chicago River	John Janson
Step this Way	Jas. B. Kent
Vanity	Mrs. B. L. Larson
Swiss Peasant Village	Edgar Loewi
Time for Lunch	Jas. S. Loomis
Courtyard of the Mission	Franklin G. McIntosh
Japanese Falls	Philip Mehler
You Can't Touch Me	F. P. Pyne
Falls of the Potomac	Gertrude Randall
The Bunny and the Tinker	Ford E. Samuel
A Study in Symmetry	Stanley Shiner
Golden Locks	Gordon W. Skinner
Playtime	L. E. Turner
Miss and Mrs. M.	Harold Winslow
June	John B. Ziemanski

ROLL OF HONOR

FIRST PRIZE

J. H. Field 9
George W. French 5

SECOND PRIZE

H. B. Rudolph 7
Kenneth D. Smith 7
Alexander Murray 6
Lyle A. Morse 5

THIRD PRIZE

J. Herbert Saunders 8
W. R. Bradford 6
F. D. Burt 6
Jared Gardner 6
Wm. J. Wilson 6
Mrs. Sterling Smith 5

HONORABLE MENTION, SENIOR CLASS

W. Kitchen 12
Sotaro Saba 12
Louis A. Dyar 11
Fred E. Crum 9
Herbert J. Harper 9
Edwin B. Collins 8
Juventino Ocampo 8
Walter Rutherford 8
Lawrence Baker 7
Oliver P. Young 7
F. A. Northrup 6
Louis R. Murray 6
Walter L. Bogert 5
James Thomson 5
Elizabeth B. Wotkyns 5

COMMENDATION, SENIOR CLASS

Dr. E. L. C. McGinnis 17
J. A. Singler 16
Gus Schinkel 15
Carlos F. DeMoya 14
Arthur Palme 14
E. E. Jones 13
Julien J. Proskauer 13
F. E. Bronson 12
J. K. Hodges 12
B. M. Whitlock 12
C. M. Harris 11
Frank R. Nivison 11
A. C. G. Allison 10
Geo. Miller, Jr. 8
H. B. Neal 8
Jiro Ito 7
Gregory L. Oliver 7
W. H. Finch 6
Paul E. Guillot 6
Roy H. Heiser 6
Wm. B. Imlach 6
John N. Consdorf 6
M. L. Shattuck 6
H. E. Horrigan 5
Frank H. Luwen 5
Herbert C. McKay 5
James J. Ryan 5

HONORABLE MENTION, JUNIOR CLASS

J. W. Jeffers 6
Robert E. de Land 5
Garnet E. Jacques 5
Edwards H. Smith 5
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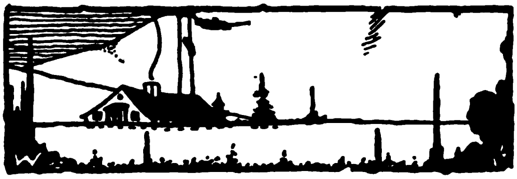

NOTES AND NEWS

Utah, the Land of Blossoming Valleys. The story of its desert wastes, of its huge and fantastic rock formations, and of its fertile gardens in the sheltered valleys; a survey of its rapidly developing industries; an account of the origin, development and beliefs of the Mormon church; and chapters on the flora and fauna, and on the scenic wonders that are a heritage of all Americans. Boston, The Page Co., 1922. $6.00.

Here is another beautiful volume in the "See America First" series, made on the same attractive model as its predecessors, and showing us the beauties of a state not as well known as it deserves. The Mormon question is handled fairly and interestingly, and the natural advantages of the state well described. The photographic illustrations adorn the book.

Bye-Paths of Color Photography by O. Reg. Published by Percy Lund & Co., Amen Corner, London, E. C. Price $1.50.

If the author of this work assumed that the use of a pseudonym could disguise his identity he was much mistaken, for the paternity is writ large on every page. In the preface the author states "it is only for the subtractive method that I have compiled these notes which are based on my own practical experience, and I have refrained from the 'additive' method of inserting 'cuttings' from other sources as my own ideas." It is a pity, however, that judicious use of his additive method was not adopted, as then possibly the author would not have been so utterly at sea in his historical notes. He states that Vogel's discovery of orthochromatism was due to his trying an English gelatine plate, whereas as a matter of fact it was a Wortley collodion dry plate that was used. Dr. Maddox is described as a commercial manufacturer of plates, while he was an amateur who made the first emulsion experimentally. To Vogel also he ascribes the discovery of the sensitizing action of cyanin and eosin. Eder and Schumann simultaneously discovered the action of the first and Waterhouse that of the second dye. Every writer has his own idiosyncrasies of style, and while this is justifiable and inevitable it is no reason why it should lead to him inaccuracies. We are told that Verdol and Cyanol are the best sensitizers. The former one might assume to be a new dye, were it not for context passages that show he means pinaverdol. But Cyanol is the name of a special dye, an amido derivative of triphenylmethane, that has no connection with the isocyanins, and, although a sensitizer, is not pinacyanol, which the author means. One might go on multiplying similar instances of errors, but to what use? It is a pity that Mr. W. Gamble, who is described as the Editor of the book, and who has written an excellent introduction, did not do his editing a little more stringently.

That the author is ignorant of the latest advances in color work is obvious from his treatment of cinematography in colors. For the production of lantern slides by the bichromated gelatine relief method, a mixture of bichromate and sulphuric acid is recommended as the sensitizer, which obviously gives rise to free chromic acid, the one chromate compound that every one else tries to avoid. The instructions for the preparation of filters are the now obsolete method of bathing gelatinized glass in the dye solution, and a method of trial and error is suggested for adjusting them to the plates. Different plates are recommended for the three exposures, such as an ordinary, an erythrosin bathed, and a pinacyanol bathed plate, which requires separate development, thus again ignoring the now accepted axiom that one kind of plate only gives the best results. As to the possibility of using a green safelight the author seems quite ignorant.

To anyone seriously interested in the manufacture of a one-exposure camera, however, there is much that is useful in the book, but even here some of the statements must be taken not too literally. To those who would obtain a more critical understanding of the action of reflectors there is much that is instructive. And to the more advanced worker, there is much that is amusing, particularly the way in which some inventors are scarified. Enough has been said to show, however, that too much reliance must not be placed on all the author's statements.—E. J. W.

World Metric Standardization, by Aubrey Drury. Published by the World Metric Standardization Council, San Francisco. Price $5.00.

This bulky volume of over 500 pages is propaganda for the adoption of the metric system of weights and measures, which has our warmest support, and if the opinions of many eminent men, the practice of many large firms and quotations from numerous journals and newspapers can help, this book should be useful. Why the metric system should not be adopted in the United States is not obvious, in fact it would seem to be logical for it to be so, considering that a decimal system of money is in use. The ease with which we all of us think in cents, dimes and dollars is clear proof of the simplicity of the liter, meter, gram system.

The Barnet Book of Photography, Edited by W. L. F. Wastell. Elliott & Sons, Barnet, England; Sole U. S. Agents, American Photographic Publishing Co., Boston, Mass. 1922. Price, $1.50.

This is a new edition of this well known textbook, with all the articles specially written for this edition, with the exception of one on Pictorial Photography, which is a reprint of the earlier article by the late Horsley Hinton. While avowedly a textbook for the use of the Barnet plates and papers, it is far more and is an excellent guide to practical work. The first article, by the editor, on "Negative Making" deals with the choice of a plate, exposure, development, fixing and the subsequent treatments. It is

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W. C. and T. M. Jarrett, Pittsburgh, Pa.
Myers R. Jones, Brooklyn, N. Y.
Sophie L. Lauffer, Brooklyn, N. Y.
W. W. Zieg, Pittsburgh, Pa.

The Tenth Annual Pittsburgh Salon will be held in March, 1923, at the Carnegie Institute Art Galleries.

OCTOBER IS CAMERA CLUB MONTH

In these days of "Days," "Weeks," "Months," etc., set aside for the special benefit of some person or organization it is only fitting that the camera club should have a "period," and so the month of October has been set aside and designated by the Associated Camera Clubs of America as "Camera Club Month." The difference between the "Camera Club Month" and many of the other designated periods will be that the thirty-four organizations affiliated with the national association will use every effort within their means to provide a program that will be both interesting and instructive to every camera user in the U. S. A., whether amateur or professional, without cost to them. Special weekly programs will be arranged so made up that the camera using public will be interested and will miss much to their advantage if they do not take advantage of the opportunity and visit the club or photographic society in their town or the one located nearest them. Exhibitions and demonstrations will predominate in the make up of the interesting events. An especial appeal will be made to the amateur, he who pushes the button and lets the corner drug store "do" the rest. An attempt will be made to show these camera users that they are missing a tremendous

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AMERICAN PHOTOGRAPHY

VOL. XVI BOSTON, MASS., OCTOBER, 1922 No. 10

THE CHROMIUM SALTS

E. J. WALL, F. C. S., F. R. P. S.

THE chromium salts are probably the most important sensitizers after the silver compounds, and are very widely used in the carbon process, in nearly every photomechanical process, and also for such minor processes as intensification and cleaning vessels.

There are two classes of chromates, the normal or monochromates X_2CrO_4 and the di- or bi-chromates $X_2Cr_2O_7$ — the X here representing some element such as potassium, sodium or ammonium, or a heavy metal such as lead, copper, etc It is obvious that one may look upon the bichromates as compounds of the monochromates X_2CrO_4 plus CrO_3.

The monochromates do not interest us much from a photographic point of view, except insofar as they are supposed to be one of the products of the action of light on the bichromates in the presence of organic matter. They are very much less sensitive than the bichromates, and neither are in themselves sensitive to light. It is only in the presence of organic matter that they are reduced, and the action that takes place may be represented as follows: —

1. $2\,K_2Cr_2O_7 + H_2O = 2K_2CrO_4 + (OH)_6 + O$
2. $Cr_2(OH)_6 + K_2Cr_2O_7 = Cr_2O_3.CrO_3 + 3H_2O + K_2CrO_4$

The first equation may be looked upon as the primary light action, and the monochromate that is formed is but very slightly sensitive, while the chromium hydroxide, $Cr_2(OH)_6$, is decomposed with excess of bichromate, as in the second equation, into the chromate of chromium which is the real agent that acts on the organic matter. This is sometimes called chromic oxide, as it may be looked upon as Cr_2O_3.

The organic substances used with the chromates are all colloids, such as gelatine, in the carbon process, collotype and photogravure, and the rotogravure processes now so much used for the supplements for the Sunday papers. Fish glue, which may be practically considered as a liquid gelatine, is used in making the half-tone or process blocks from which the illustrations in this journal are printed. Gum arabic is another colloid used in the gum-bichromate process.

The peculiar action of the bichromates under the influence of light is to render all the colloids more or less insoluble in water, even hot water in the case of gelatine, and cold water in the case of fish glue and gum. This peculiar action takes place also with gum tragacanth, albumen, and to a lesser degree with glycerine, starch, dextrine and sugar.

In the case of the last-named, complete action, that is complete insolubility in water, only ensues after very prolonged light action; but with normal action the sugar, and the same thing applies to syrup and molasses, which are no more than uncrystallisable sugars, loses its hygroscopic nature and becomes less tacky. On this property is based the powder process, which has fallen into almost complete disuse. Here a bichromated mixture was exposed under a positive and then fine powder, such as graphite, dusted over the surface, when it adhered to those parts not affected by light.

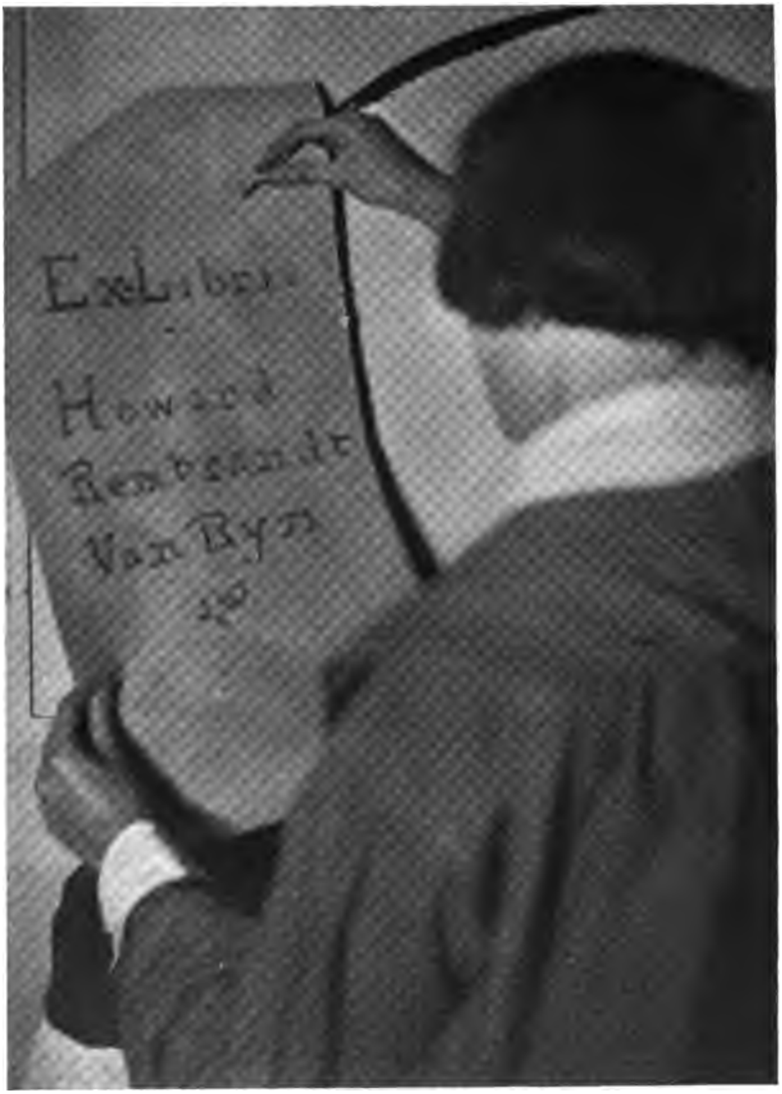
In the case of gelatine the action of light is first to cause the absorption of the oxygen set free in equation 1; but the essential reaction is a combination of the chromium chromate with the gelatine, and this new compound is completely insoluble in hot water.

It is obvious that as the insolubilization takes place in the ratio of the light acting, a more or less pronounced relief is formed, which is used for various processes. The insolubilized gelatine being practically colorless, it obviously forms a very convenient vehicle for the so-called aniline colors and is much used, therefore, in color photography for making the constituent prints of a three-color picture. Then, also, as the hardened gelatine will not absorb certain dyes, while the unaffected gelatine will, this is also utilized in color work, as in the pinatype and imbibition processes, in which the stained plate is squeegeed into contact with a gelatinized surface and the dye migrates into the latter, giving a pull in colors. Practically one may look upon these print-plates, as they are called, as similar to rubber stamps.

Probably the most beautiful process in which a bichromated relief is used is Woodburytype, which has unfortunately fallen into disuse, mainly on account of cost. In this a hardened gelatine relief is obtained and stripped from the glass, then forced with a pressure of about one ton per square inch into a soft metal, such as lead or a lead alloy. The result is an intaglio corresponding exactly to the relief. Into this intaglio or mold is poured a warm gelatinous colored ink, a sheet of paper is laid on top of the ink and a pressure plate brought down so as to squeeze out the excess of the ink. As soon as the ink is cold the plate is lifted and the paper stripped, bringing with it an absolutely permanent print in any desired color. To give some idea of the hardness of the Woodbury skin, although it may be in some places less than 1-1000 of an inch thick, it may be used fifty times or more for pressing into the metal without being damaged at all.

Bichromated gelatine not only loses its solubility in hot water under the light action, but also its power of swelling in cold. It is thus possible to obtain photographically a mold from which casts in plaster of Paris may be made, or the surface may be made conducting by rubbing with graphite and a thin skin of metal can be electrolytically deposited, forming a perfect replica of the object originally photographed. The exposed gelatine, thus having lost its power of swelling in cold water, or, what comes to the same thing, its absorptive power for water, one has but to pass a roller charged with a greasy ink over the surface and the ink will adhere to the exposed parts and not to the unexposed; then, on placing a sheet of paper in contact with the inked surface, the ink transfers to the paper and one has a collotype print. This process has again been supplanted commercially by the perfection of the half-tone process; but a good collotype is infinitely superior to the latter, as the grain that holds the greasy ink is an irregular one. Actually it is a reticulation of the gelatine surface into a series of irregular worm-like forms, which are not so apparent in the final pull as the regular cross line of the half-tone. A good collotype with a fine grain is difficult to distinguish from a silver print on print-out paper, and the fineness of the gain is completely under control.

The bichromates chiefly used are either those of potassium or ammonium, the former



A PHOTOGRAPHIC BOOK PLATE

HOWARD REMBRANDT VAN RYN

more especially. There is a corresponding sodium salt, but this is very rarely employed because it is so hygroscopic in nature that it is a nuisance to keep. Considering these salts in the same way as we have the sulphites and alkalis we can at once find their relative values from their formulas:

$K_2 \quad Cr_2 \quad O_7$
$(39 \times 2) + (52 \times 2) + (16 \times 7) = 294$
$(NH_4)_2 \quad Cr_2 \quad O_7$
$(18 \times 2) + (52 \times 2) + (16 \times 7) = 252$
$Na_2 \quad Cr_2 \quad O_7$
$(23 \times 2) + (52 \times 2) + (16 \times 7) = 262$

Neglecting the sodium salt altogether, it is clear that as the chromium is the only agent that we need consider, 252 parts of the ammonium salt are equivalent to 294 of the potassium or the ratio is 100 of the former to 117 of the latter.

The above statement is chemically correct, but photographically incorrect, because under the action of light in the presence of a colloid, the decomposition of the ammonium salt is far more complete than that of the potassium. Lumière & Seyewetz (*Jahrbuch*, 1906, 184) found that under like conditions *one hour's* exposure with the ammonium salt gave a similar effect to that of *seven weeks* with the potassium. The reason for this striking difference is that the ammonium monochromate, which is formed by light action, is with sufficient exposure completely dissociated; whereas with the fixed bichromates, potash and soda, as soon as half the chromic acid is reduced and the monochromate formed, the sensitiveness drops enormously as they are not further dissociated.

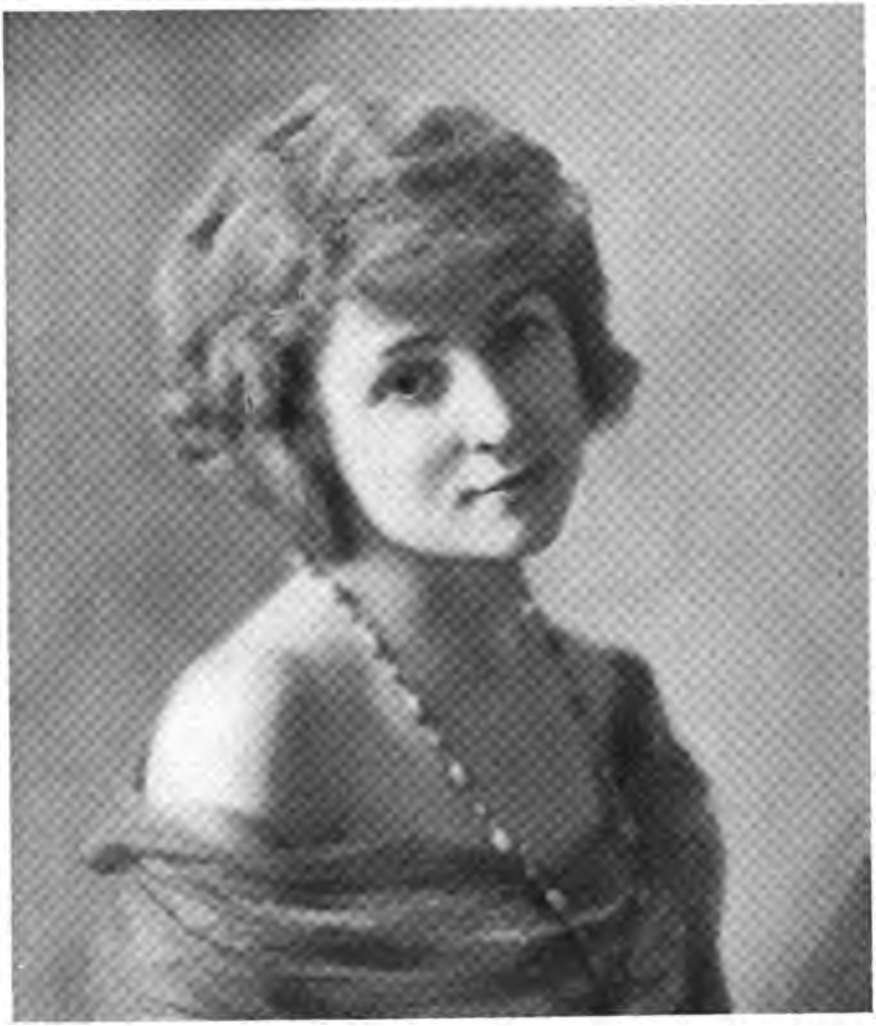
From this statement it is clear that the ammonium salt is the better of the two and the reason why the potash salt is used is on account of its cheapness. Both keep equally well, but the ammonium compound is far more soluble in water, as will be seen from the following statement, which shows the weights of each dissolved by 100 parts of water:

	10° C. (50° F.)	20° C (68° F.)
Ammonium bichromate	24	30
Potassium bichromate	8	13

A cold saturated solution of the potassium salt may be practically considered as a 10 per cent solution. This greater solubility of the ammonium salt is an advantage when one wants to use a semi-alcoholic sensitizer, because one can then add as much as 50 per cent of alcohol or acetone without the salt being thrown out, and these semi-alcoholic solutions naturally permit one to dry carbon tissue much more rapidly.

The slowing up of the light action, mentioned above, has led to the addition of ammonia to the normal sensitizer, and then one has probably the formation of the double salt $K(NH_4)Cr_2O_7$, which is naturally more sensitive than the plain potassium compound. If excess of ammonia is used the normal monochromate is formed and there is actually loss of sensitiveness. Assuming the normal carbon sensitizer to be 3 per cent solution in summer and 4 per cent in winter, not more than 2 ccm of ammonia should be added per liter, or one may use half the quantity of ammonium carbonate. This addition prevents any possibility of the occurrence of free chromic acid and the consequent insolubilization of the tissue in the dark. With excessive quantity of ammonia the tissue tends to pucker up into innumerable irregular wrinkles, or to reticulate, and these naturally are more apparent in the highlights and completely spoil a print.

We are not treating of the carbon process, but it may be considered as an axiom that the thinner the negative the weaker should be the bichromate, for this means a more prolonged light action to attain the same effect, and the stronger the print. In summer,



BECKY
CHARLES H. DAVIS, NEW YORK

We must pass over in a few words Manly's old ozotype process in which gelatinized paper was sensitized with bichromate and manganese sulphate, and after exposure squeegeed into contact with carbon tissue impregnated with a reducing mixture such as ferrous sulphate or hydrochinon and cupric chloride, and the hardening action was transferred from the exposed image to the pigment plaster, as it was termed; the print was then treated exactly as a normally exposed carbon tissue. This process was originally described by Marion in 1873, but had been completely forgotten till revived by Manly.

Later Manly introduced the ozobrome process, in which a bromide print is dampened with water and squeegeed into contact with carbon tissue saturated with a mixture of bichromate and ferricyanide, and then treated as a carbon print. This has been practically revived under the name of Carbro. There is no question that the carbon process is one of the finest of all processes; the results are permanent and can be obtained in any color. As by the use of this modification we are independent of daylight, the starting image being a good bromide print, this ought to induce many to take up the process, as having once obtained the bromide print, any number of carbons can be prepared from the same by merely washing and redeveloping after its short contact with the tissue.

As, when an acid is added to a bichromate, chromic acid is formed, it is obvious that after the addition of a halide, either hydrochloric acid or an alkaline bromide or chloride, if a silver image is treated with the mixture, we have first the formation of silver chromate and then its instant conversion into the silver halide, so that this forms a very simple means of bleaching the silver image. This has given rise to an easy method for reducing the contrasts of over-harsh or contrasty negatives, as was suggested by Eder in 1881. The negative can be immersed in:

Potassium bichromate	10 g	80 gr.
Hydrochloric acid	50 ccm	½ oz.
Alum	50 g	¾ oz.
Water	1000 ccm	16 oz.

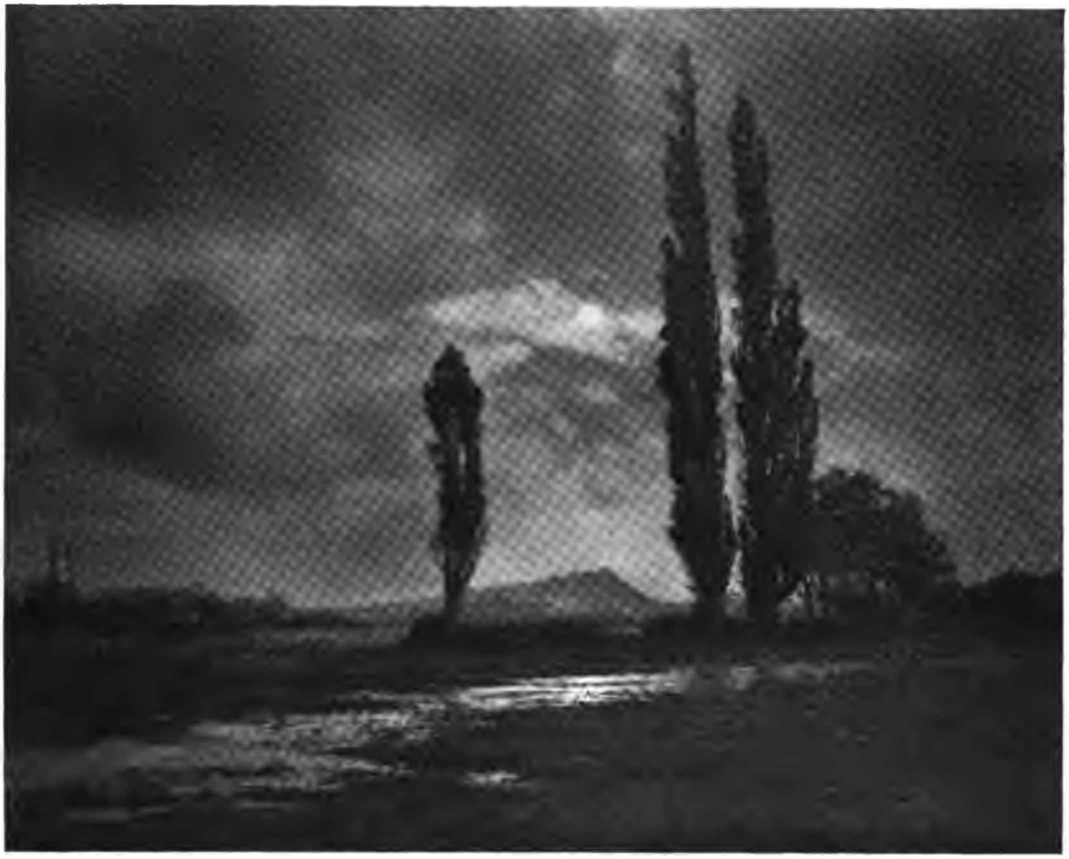
Leave until the image is bleached right through to the glass. Then it should be well washed until it no longer shows any yellow tinge and redeveloped with a dilute developer until the shadows and half tones are quite developed, but the highlights still appear white from the glass side. Fixing the plate at this stage naturally dissolves the unreduced chloride and the contrasts are lessened.

A really excellent intensifier was also based on the same process by Welborne Piper. It has the advantage of being practically stainless, nonpoisonous and can be repeated at will. The bleaching solution may be one of the following: a 5 per cent solution of potassium bichromate and a 10 per cent solution of hydrochloric acid, sp. gr. 1.16 (containing about 32% HCl gas). The actual bleaching baths are

	A	B	C
Bichromate solution	4 oz.	8 oz.	8 oz.
Acid solution	3 drachms	2 oz	8 oz.
Water	16 oz.	10 oz.	4 oz.

Wash after bleaching until all yellow stain is removed, then develop with amidol, or use an alkaline developer and expose in the solution to daylight (not sunlight). A gives an intensification equal to mercury and ammonia; B to that of mercury and ferrous oxalate; C to that of mercury and sulphite. The process may be repeated several times

The action here is undoubtedly first the formation in the solution of chloro-chromate and the formation in the image of silver chromite As an improvement on this Lumière & Seyewetz (*Brit. J. Phot.*, 1919, **66**, 451) recommended the use of the chlorochromates them-



IN A LAND OF ROMANCE

JOHN M. WHITEHEAD

Honorable Mention, Second Annual Competition

selves and the ammonium salt is preferable. This can be made by dissolving 252 g ammonium bichromate in 250 ccm distilled water with the aid of heat and adding 197 ccm of pure hydrochloric acid, sp. gr. 1.16, evaporating till crystals begin to form, then cooling and collecting and drying the crystalline scales. The action that takes place may be represented as follows:

$(NH_4)_2Cr_2O_7) + 2HCl = 2CrO_2(NH_4)OC + H_2O$

The result should be 315 g of chlorochromate. A 3 per cent solution serves for the intensification of plates and 2 per cent for prints.

The action on the silver image is as follows:

$CrO_2(NH_4)OCl + Ag_2 = CrO_2 (NH_4)OAg + AgCl$

The silver chloride is reduced to metal by the developer. It is clear that if this action is repeated there is less and less silver chloride formed each time and with five repetitions the quantity of available silver is reduced to 1-32 and the action cannot be carried further. There is a deposition of the silver chromite which is brown and gives the intensification. This would seem to offer an advantage over the original process in that one need not be careful as to the exact ratio of the acid, as if too much be used the chromium compound is dissolved and there is no intensification.

If instead of using hydrochloric acid we use sulphuric, then sulphate of silver is formed and this is soluble in water and therefore we have at once a good reducer. This is occasionally used for prints and is employed with screen plates to dissolve the primary image.

There is yet one other use for bichromate, which has today less value than when suggested by Sterry (*Phot. J.*, 1904, **44**, 50) If one has a very hard negative from which it is difficult to obtain a bromide print with full details in the highlights before the shadows are clogged up; one only need expose for the highlights, ignoring the shadows, and then prior to development immerse the print in a 1 per cent solution of bichromate for one minute. Then wash for 15 to 20 seconds and develop in the usual manner, when the full details are obtained in the highlights without the shadows being blocked up. For gaslight (development) papers only a 0.2 per cent solution should be used. With the great range of development papers now available, which enable us to choose the most suitable, this process is not so valuable.

Of the metallic chromates little or no use is made in photography. In the old days of wet plate and collodion emulsion, orange fabric or paper was made by impregnating stout paper or closely woven cloth with a 10 per cent solution of lead acetate or nitrate and as soon as surface was dry immersing in 10 per cent solution of chromate, when insoluble orange lead chromate was precipitated in the fibers, which gave an excellent safe light.

There is one use of the bichromates which does not seem to be generally known, but which deserves full attention from practical workers, and that is its application as a cleaning medium. This was suggested by Carey Lea, of Philadelphia, in the early collodion days, but has fallen into disuse because we no longer have to clean our negative glasses. A stock bottle of it is always to be found standing in my darkroom and it can be used for cleaning anything and everything, almost. It is very easy to make:

Potassium bichromate	125 g	4 oz.
Water	250 ccm	8 oz.

Then add slowly with constant stirring, or shaking, for it is just as well to mix it in the stock bottle:

Sulphuric acid	40 ccm	5 oz.

MORNING LIGHT ERNEST M. PRATT

Pittsburgh Salon, 1922

Considerable heat is evolved and the salt nearly always goes into solution. As soon as all the acid is added, add:

Water to... 1000 ccm 32 oz.

A little of this poured into dirty dishes or graduates cleans them like magic, and it is only necessary to wash with water to have a really clean dish. Actually one has here a strong solution of chromic acid with excess of sulphuric. The only point to be careful about is that it bites the fingers rather smartly, but one can easily make a mop by tying a swab of absorbent cotton round the end of a stick, and use this if required, though the soultion is so energetic that friction is rarely required.

Occasionally one hears of bichromate poisoning, caused by absorption of the salts by the skin, but this is only to be feared when one is commercially engaged in their use, that is, one who is dabbling the hands in the solution all day and every day. In their occasional and limited use by an amateur this is not to be feared at all.

In this brief sketch of the uses of the bichromates in photography enough has been said to show how important they are, and yet we have passed over many points that might have been raised, and every process touched upon might well serve as a text for a treatise in itself.

DR. AMASA DAY CHAFFEE

JOHN WALLACE GILLIES

DR. CHAFFEE is known principally for his wonderful bromoil prints, at which he excels all others. This statement is made without qualification. Years ago he used to work on carbon, and one day when I was at his house he showed me a fat brush, which he told me came from England and cost him some seven dollars. That impressed me a great deal; it came from England, and cost seven dollars. He had taken the trouble to get a fat brush from another country, at some effort, and considerable expense, mentioning in the same breath that he was going to make bromoil prints and thought the fat brush would make it easier and better. There is a lot in this if you will consider it.

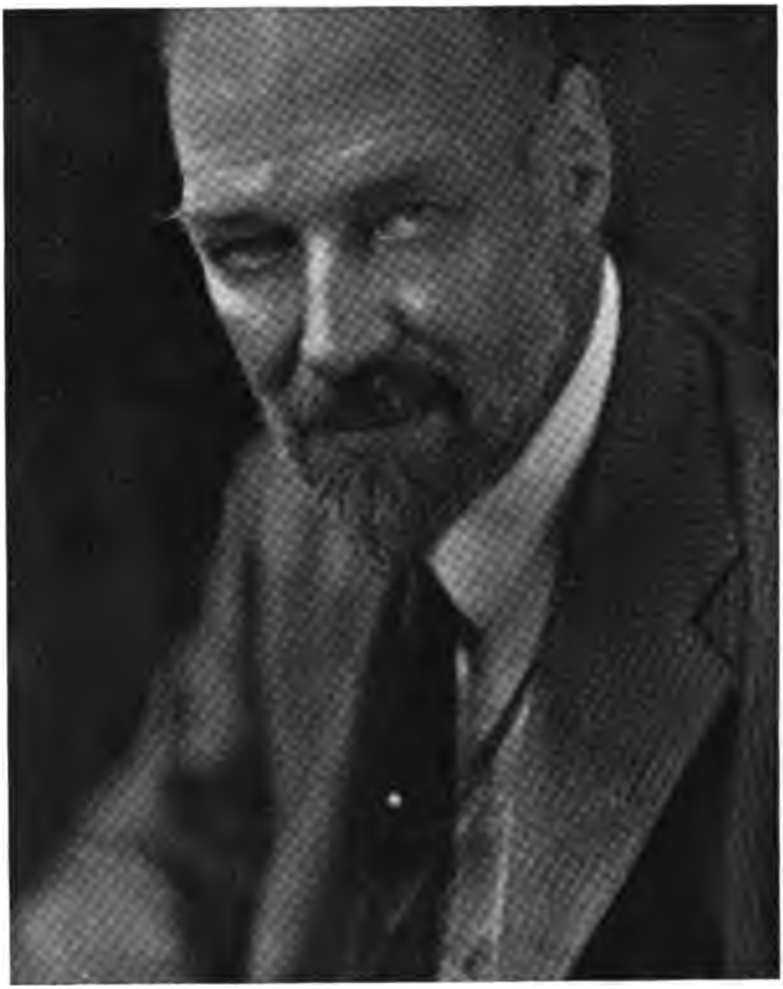
Here was a man who proposed to make a series of prints in a process new to him, and had gone to all this trouble before making a single print, this representing but a small part of the outlay, in bother and expense. It told a story of a character which would painstakingly put a great deal into a thing in the hope of getting something out. How many photographic workers would go to this trouble before beginning a thing? Herein lies the secret of Dr. Chaffee's success with bromoil; the infinite pains he takes to do the work. When he was doing carbon he did the same thing, and the prints were very beautiful; so when he put the same quality of effort into oils he accomplished more than anybody else ever did.

As to the pictures that he makes, the subjects are mainly European towns and buildings, and have the advantage of being something we do not see right along. He has spent many summers in Europe with the camera and has many negatives which have never been printed. If he never made another exposure there would be enough to supply him and two or three others with pictorial material for the rest of their lives. He makes his negatives from the standpoint of pictorial value, and pays no attention to what we call pattern or design. Perhaps it is as well. Too much pattern would upset everything but of course the writer as well as many others is a strong advocate of that method of making a picture with the camera or any other way.

Having established the fact that Dr. Chaffee arrived at the high point in photography by means of his exquisite bromoil prints, we find that he is now at present engaged in being the President of the Pictorial Photographers of America, a job which is more or less thankless, as all these jobs are. When the chief officer of an organization of this kind does a thing rightly, nothing is said; but when he makes a mistake there is a grand howl. If he is conservative there is a loud and raucous yell and if he is radical there is a similar yell. No matter what he is, he is all wrong. He hasn't got a chance. There are always factions, and they never agree; if one faction does a thing, and gets it going, the other faction registers against it with full force, and yells as previously described, and it cannot be right. All support is withheld.

Dr. Chaffee is a diplomat. Usually a diplomat is a well-mannered crook, who takes your wad with such grace and such perfect explanations, that you hand him your watch also. Dr. Chaffee is not one of these. He has the good manners, but he happens to be honest in spite of them. He has dignity; lots of it — enough so that he has been able to practically eliminate factionism, and get all hands working together. In this he has been ably seconded by Clarence White, the former president, and between the two the Pictorial Photographers have worked together to some purpose.

By this I would not mean to convey that all has gone well with them. They have



DR. A. D. CHAFFEE

JOHN WALLACE GILLIES

ambitions, and ambitions are tantalizing things, especially when they depend to a certain extent upon a bunch of phlegmatic and apathetic pictorialists, who only respond to especial personal praise. The surest way to get any pictorial worker to listen to anything, is not to explain the value of the idea, but to tell him he is the wonder of the age when it comes to making pictures. Reason is not the thing; it is too prosaic. Emotion is the thing which controls his actions. One of our most eminent pictorial workers aptly describes it as "Back Scratching." "You scratch my back, and I'll scratch yours." There is something in this, I must admit, but perhaps no more than in any other organization where art is the victim. Poor Art; he gets his every time they meet.

I tell you all this so that you will know what Dr. Chaffee has had to overcome; and with the aid of certain individuals he has done it. I happen to be a member of the Pictorial Photographers, and am doing quite a bit of work along lines especially selected by myself, where it will do a little good, and not tax me too much in time; but the members who are doing the real good are those who are giving their good time to the various matters, with no hope of reward; just to see it go. That's the finest way to do a thing.

The Pictorial Photographers start a new year this fall with the greatest promise they have ever had. Many small matters have been corrected, which needed correction, and the result should be wonderful. They are most assuredly embarking on a new year of better things, and Dr. Chaffee is steering the boat.

THE PHOTOGRAPHIC DEALER—THE SCIENTIFIC INSTRUMENT BUSINESS AS A SIDE LINE

MERVYN THOMPSON

TO TALK or write of a dealer immediately brings up to the mind a mental picture of those far-away by-gone days when commodities were exchanged for commodities in contra-distinction to the exchange of commodities for money. In those days there were no monopolies, large trading companies, income tax or rate collectors. Business was a comparatively simple matter. If one desired to dispose of a possession the process was to truck the article around until, either by luck or hearsay, you came across the "Johnnie" who was willing to pay in terms of skins, cow or whatever else which you either required or were willing to accept as payment for what you offered. Whether we take a biological view and go the [illegible] of the jelly-fish, or whether we [illegible] from the time of Adam and his [illegible], the fact remains we have evolved [illegible] and complexities. Life has become more difficult [illegible] business especially in these days of slump and stagnation [illegible]. The happy man to-day is he who is able to say "I am successful." Success in a trade or business that has for him the greatest interest was the [illegible] found the greatest happiness and contentment. To [illegible] the business side of photography appeals before the artistic or portrait side [illegible] business than that of the real high-class photographic dealer.

The photographic dealer's business is [illegible] is emerging [illegible] from the time when the side of photography consisted mainly as a side-line.

SISTERS SALOME E. MARCKWARDT
Third Prize, November, 1921, Senior Competition

line to the "pill merchant," and now has a standard and dignity entirely its own. Looking at it from an economic point of view there are certain facts that must be taken clear sight of. The baker or the butcher, trading in necessities, has a probable customer in every man, woman and child, resident in the neighborhood or town. It is not everyone, however, who requires photographic goods, although there is no reason why the majority of the population should not be considered in the light of potential customers. The dealer who is at the same time an enterprising business man will always have this in mind, and be ever seeking new methods and means to stabilize or increase his turnover, to make the potential — actual. Amateur photography is becoming increasingly popular, because it appeals to the public taste, but that public has first to be "caught," and then educated to think in terms photographic. The dealer does not as a rule sell a camera in a mere casual manner because the particular instrument catches the fancy of the passer-by. Outside of sundries there are very few chance sales. An excellent window display, a reputation in the business, etc., will help to bring clients; but those clients will as a general rule be only those persons, who have by some manner or means already attained a desire to take up photography, although at first it may be only a very apathetic interest or curiosity. The question then arises, how can the photographic dealer satisfactorily introduce into his business a means to increase his turnover, that at the same time will enhance his prestige, or at any rate not be in any sense degrading?

Quite obviously the combination of druggist-photographic dealer does not tend to maintain the highest status of the profession. Admittedly it is excellent from the druggist's point of view, but that aspect of the matter we are not at the moment considering. We are however very much interested in the dealer's point of view, from that direction that places the photographic dealer first.

WINTER SUNSHINE ALEXANDER MURRAY

Third Prize, November, 1921, Senior Competition

To hark back to those potential customers we desire to attract, it is worth while to consider the possibility of a photographic dealer carrying a stock of scientific instruments, for instance such articles as barographs, barometers, thermometers, clinometers, drawing instruments, slide rules, binoculars, opera glasses, telescopes, microscopes, aneroids protractors, compasses, salinometers, hydrometers, and even certain high-grade clocks and watches, etc., etc. A stock of such articles, or a stock of a few of the best sellers with the means of obtaining quickly any instrument especially ordered, would bring into the shop a variety of customers. Once inside the shop as an enquirer or purchaser, the dealer will not find it difficult to create and seize a real concrete opportunity to push his photographic goods. Going even further, a stock of paints, brushes and canvases, etc., will bring in the artist folk, while road maps and the like should bring a chance at the vast army of outdoor-loving people, such as motorists, cyclists, etc.

IN OLD WHITBY J. HERBERT SAUNDERS

Third Prize, November, 1921, Senior Competition

A business of this sort should not be in any sense derogatory. On the other hand it may be the means of not only increasing the turnover upon the photographic side of the business, but the profit upon the "outside" turnover may help to carry those extra establishment charges entailed by shop premises in the main street, which up to the present have been too onerous to risk.

That a business of this sort would be successful there is every reason to believe, and a pointer is obtained from the fact that a large number of firms existing primarily for the sale of scientific instruments handle photographic goods, and moreover, handle them well.

Although some photographic dealers run their business upon these lines, still too often things seem wrongly adjusted. It is the optician that combines with his business the scientific instrument side. The photographic business still more frequently than is good for the status and prestige of the profession is pushed in to help pay the rent of the dispenser of medicines, and the seller of arrowroot and tooth brushes.

[illegible] F. W. MARCILLE

PHOTOGRAPHING DOGS

F. W. MARCILLE, BREEDER OF ENGLISH BULLDOGS

THIS is an article for those who love and understand dogs and [illegible]. There is a constant demand for good pictures of [illegible]. You are probably aware that there is a dog [illegible] once a year, sometimes oftener, but [illegible] probably do not realize what there [illegible] "[illegible] talk dog" [illegible] your first exposure [illegible] amateurs have [illegible] something about [illegible]

ENGLISH BULLDOG PUPPIES F. W. MARCILLE

MONITOR MARQUIS—ENGLISH BULLDOG PUPPY F. W. MARCILLE animals as well. It is a good plan to get a neat card printed — "John Smith, Animal Portraiture" — and let that be your "open sesame." You need not wait for the next dog show, for, probably, on your own street or in the next block there is a pedigreed animal. It might be a cat. Whatever it is, have a talk with its owner; tell him you like his animal. Usually you will find that is all that is needed. It is not hard to get the job.

Animal photography is a branch of work which requires not only considerable skill in the use of the camera, but also knowledge and love of animals as well as resourcefulness to enable the worker to deal with adverse conditions that are bound to arise. These conditions cannot be anticipated, for they rarely repeat themselves in all animals. Saying "sic'em" to a bull terrier will cause him to be alert and all attention, but will it make a Jersey bull come to his toes and give him a glint in his eye denoting that he is eager for the fray?

In photographing dogs there are as many dodges needed as there are in enlarging negatives. You "dodge" your negatives to bring out all that is in them; likewise dogs. The writer finds that dogs, as a rule, will assume an alert attitude if the photographer makes use of one or other of the following expedients: making a buzzing or hissing sound with the lips, rattling a bunch of keys or a half filled match box, tossing a piece of paper in the air or crumpling it up. Give them something new to get their attention just previous to making the exposure; they seldom respond to the same dodge more than twice in succession. The writer recalls one of his early attempts with a litter of six puppies that absolutely refused to enter into the spirit of having their pictures taken. They were placed upon a box and they all persisted in jumping to the ground. After giving them a hearty meal, we drew a straight line across the top of the box with a piece of raw meat. The puppies toed or, rather, nosed that line like Olympic sprinters and when all were in position they were forced to their bellies and held there motionless. The day was warm and the puppies, being well fed, fell asleep, whereupon the writer stationed himself beside the camera. The pups were still sleeping and it took about three sharp barks to open their eyes and make them raise their heads. The one on the extreme left was a bit slow, but it was altogether a very satisfactory picture, for it helped to sell all the dogs.

It is not very well known that if a dog is kept upon his back and his legs held so that he cannot move, he will soon fall asleep because of the relaxation of his muscles. The writer has found that knowledge an invaluable aid in picturing a dog. When posing the animal, hold him quiet until he remains where you want him, and the rest will be easy.

It is a good plan always to keep the camera rather high, above the dog, for a truthful and satisfactory representation. A clever animal photographer in Ohio who gained quite a reputation for his animal photographs always worked above the subject, using a twelve foot tripod, and, sometimes, when photographing large animals such as horses or cows, he used a specially built platform.

Small dogs and other small animals very often are photographed in an ordinary professional portrait studio, simply because their owners want a picture and do not know anyone else who can do the work, but these pictures are very rarely satisfactory and the writer has heard many complaining of unsatisfactory results. There are many reasons for this: the average professional portrait photographer does not know what would be a good position and if he does, he seldom can take time to secure it. Usually the dog, or whatever it may be, is ill at ease in the strange surroundings. In order to get a picture that will please a fancier or a breeder it is necessary to bring out in the photograph the good points of the particular breed, such as the massive head and tremendous jaw of the English bulldog, the square-headed profile of the Airedale, the flat face of the Pekingese or the trim

RUINART SENSATION—FRENCH BULLDOG

F. W. MARCILLE

conformation of the Boston terrier. In his own yard a dog cannot help being natural, and much better results can be gained if the photographer goes to the dog instead of having it brought to him through noisy streets, so that it becomes excited and therefore behaves badly at the studio.

A visit to a dog show is recommended to a photographer who wishes to make a little extra money. Talk with some of the exhibitors: you cannot see them all, but the show catalogue will give their names and addresses so that you can call them up or write them a letter. Do not write a formal, stereotyped letter, but one that is likely to create a feeling of good fellowship. There is constant and steady business to be obtained from breeders with their new litters, and photographing their foundation stock regularly. If you can give satisfaction from the start, it will be an easy matter to build up a reputation in a very short time, for really good animal photographers are not found in every town.

COPYING

PART I

CHESTER F. STILES

COPYING is a special case of photography at close ranges, and is governed by optical considerations somewhat different from those applying to ordinary work. We will deal with the optical part in this article, reserving such matters as the technique of lighting, sensitive material, developing, and the handling of special types of copies, for a later instalment. When your lens is focused so that the image of an object is the same size as the object itself, the bellows extension is always two focal lengths. For very distant objects, the extension is the same as the equivalent focus, one focal length. For various reductions you get various bellows settings between one and two. Strictly speaking, these extensions are measured from the optical centre of the lens to the ground-glass, but approximately you may measure from the diaphragm.

You will therefore need a long-bellows camera, at least twice the focal length of your lens, or you cannot reach the condition of equal size. For every change in the distance of the object you have a change in the extension, one distance growing larger as the other grows smaller, and *vice versa*. The optician has named these mutually dependent distances, from lens to object and from lens to image, the conjugate focal lengths, in distinction from the equivalent focal length, the last being the shortest conjugate a lens may have. As this is a fixed distance for each lens, it has become the identification by which all lenses are compared in optical properties or listed for sale.

In practice, you measure equivalent focal length by making a sharp image of distant object and another of a near object, then noting the difference in the bellows extension. This gives accurate values, and the optical centre of lens does not have to be known at all.

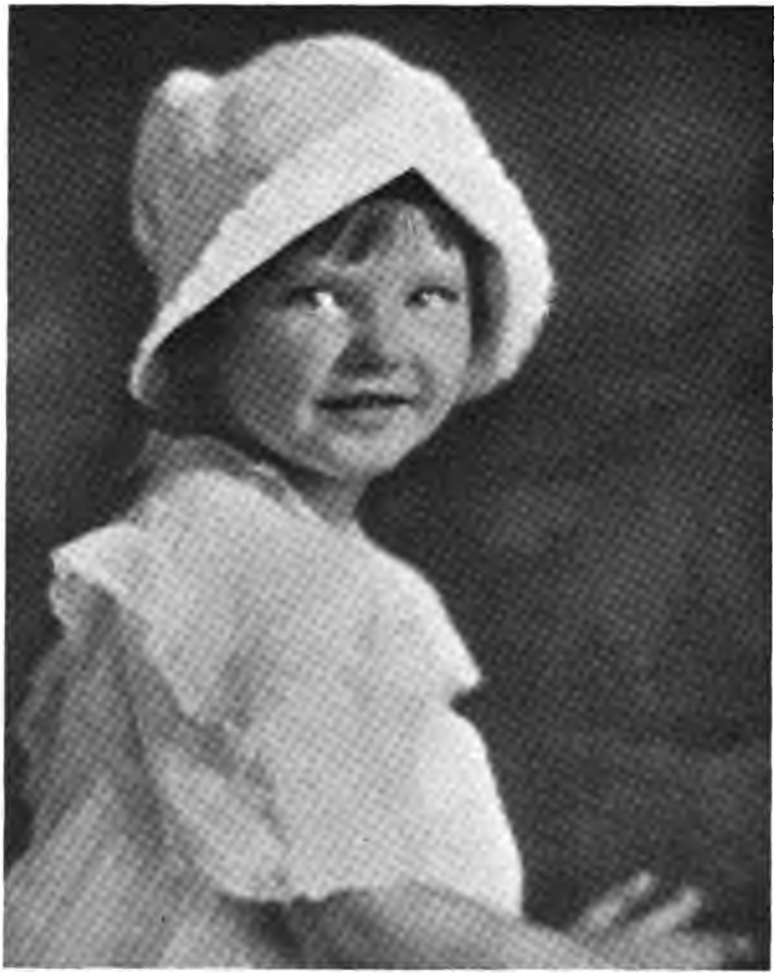
The conjugate relations are very simple. Your bellows extension on one-third size, for instance, is one-third the object distance, which is the focal length multiplied by number of times of reductions with one focal length added. Expressed as a formula, it is

$$(r + 1)\,p = F \text{ and } F \div r = f$$

Ratio, r, is the linear and not areal relation between image and object size, p is the equivalent focus, F and f are the conjugate distances. A reduction to one fifth, with an eight inch lens, you figure $6 \times 8 = 48$ in., and $48 \div 5 = 9.6$ in. Strictly speaking the ratio is one-fifth and not five, but the pair of distances comes out just the same. $(1 + 1/5)\,8 = 9.6$ in., and $9.6 \div 1/5$ is 9.6×5, or 48 in. By using the whole numbers, you can often do all the figuring in the head, and the longer distance is obviously lens to object in copying and lens to plate in enlarging.

While the use of a short-focus lens means shorter bellows extension and allows you to work at shorter distances, it has the disadvantage that the front of the camera may interfere with the lighting of the subject and cast shadows; you find it hard to get at diaphragm adjustments or to adjust the position of the copy. Longer focus lenses have optical advantages, because, at greater distances, you do not take in as great an angle, and you have less chance of reflections from glossy surfaces.

Up to their optical limits, you can make very good copies with rapid rectilinear lenses. These lenses have a falling off in definition towards the margins, and astigmatism. This



CHILD STUDY

D. J. BRODERICK

First Prize, August Senior Competition is not completely remedied by stopping down. You do not have a brilliant image for focusing, so the exposures have to be prolonged to make up for lack of intensity of light, when the lens is stopped down for definition.

Precise copying demands high grade optics, and of course, a sufficiently rigid camera and copy-board arrangement to get rid of vibration. There are great advantages in short exposures. There is less chance for irradiation, a kind of halation where the fogging action in the black parts of negative spreads sidewise and clogs up the fine clear lines, and your chance of spoilage by vibration is lessened.

The anastigmats with flat fields let you focus at full apertures, and need very little stopping down. Their precise definition allows them to dig into the shadows and preserve detail. On account of the so-called inertia of emulsions, there is a limit of light intensity to which the plate will respond, even on prolonged exposures. Where the corrections of a lens give needle point definition as in the Dagor, the IIB Tessar, and similar lenses, you get action in every part of the image. Lenses not highly corrected really have confusion disks in place of image points, and are not able to overcome the inertia of the plate.

Stopping down the lens should only be that required to gain the necessary depth — depth of field at the copy, which may not be absolutely flat, and depth of focus enough at the image to take care of the concavity of the plate. Emulsions are always coated on the concave sides, and plates are never absolutely flat.

Small stops tend to give you flat negatives. Large lenses when stopped down give more equality of illumination than do those of smaller diameter, because they intercept fewer of the marginal rays. You will often find as good results with *f*:8 on an anastigmat as with the R. R. at *f*:16, and focusing is no longer a matter of guess work.

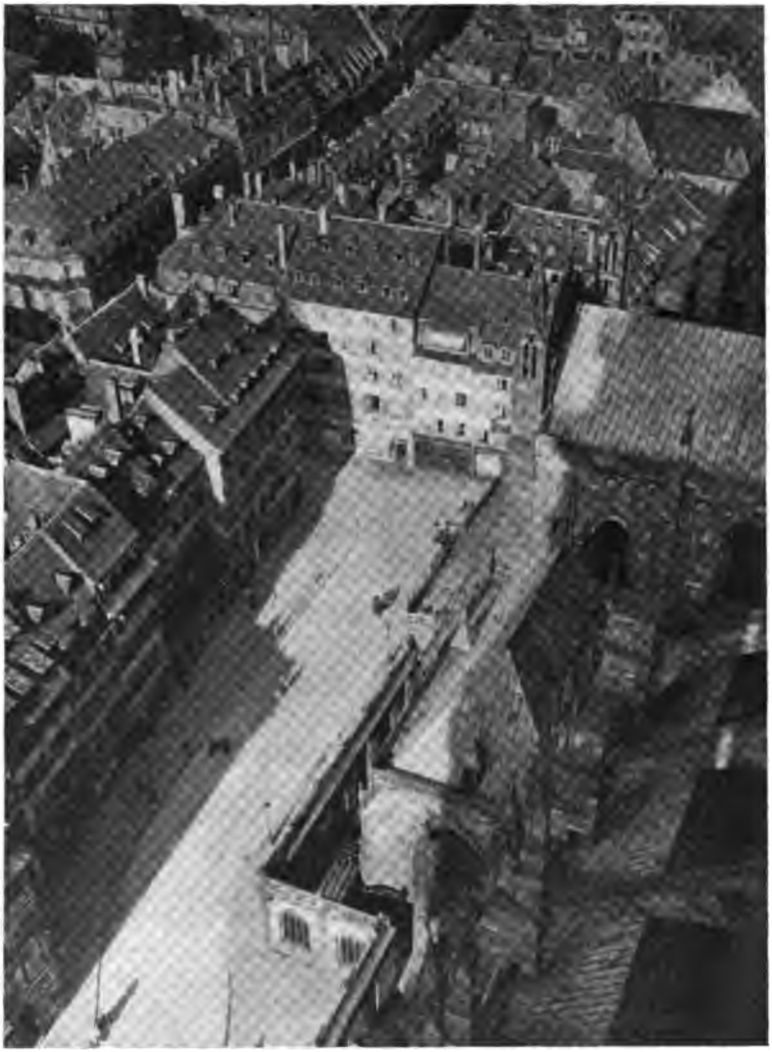
Copying to scale is another step upwards in precision. The lens must give correct images at all scales, and it is important that the focal plane does not shift when the lens is stopped down, which would give you a different scale in the negative from what you measured up on the ground glass, outside of the annoyance of having to refocus with smaller stops.

Lenses well corrected for curvature of field, and free from astigmatism, may still have zonal errors or residual spherical aberration. While the focus for central rays and marginal rays may be the same, intermediate zones may have incomplete corrections, hence the term zonal aberration. This of course refers to the field of the actively photographic rays and is tested by actual exposures and not by mere inspection of the ground glass image. Zonal aberration detracts from crispness of definition, and its effects have been aptly noted as resembling a drawing made with a blunted pencil instead of with a properly sharpened one.

Lenses primarily for copying, also suitable for commercial work, can be obtained of moderate speeds, but, being corrected, need no stopping down, like R. R. lenses of the same listed speed. You can choose from Cook V, *f*:8, *f*:16, Goerz Gotar, *f*:8, Turner Reich, *f*:9, Velostigmat Process, *f*:8, *f*:16, and others.

Another annoying aberration is coma, which when present will give you negatives with flat appearance, lacking contrast in the fine details. Sometimes this appearance is mistaken for errors of exposure or development, or faulty plates.

Color reproduction brings new demands on lenses, and, of course, you can apply them to the less difficult tasks of black and white work. As the lens must work with a red filter, it follows that the image with the red filter must be exactly the same size as the blue and green filter image, which means the focal length of these rays must be identical.



THE CITY BELOW

WARREN R. LAITY

Second Prize, August Senior Competition

This is of great importance to the photo-engraver, but is also of some importance in black and white filter reproductions of colored originals like rugs, or in color photographic work with separate filters instead of screen plates.

The stop values in copying are not the same as in the regular work. You will note that the illumination on the ground glass drops off as the copy images grow bigger. Stop *f*:8 for an eight-inch lens is approximately an inch in diameter. At focus for equal size images, the focal distance has increased to sixteen inches, so that the stop is really *f*:16 instead of *f*:8, and you will need four times as much exposure. With enlargements, the exposure increase is much greater. In all cases, reductions or enlargements, the increase in exposure varies as the squares of the bellows extension. Your figuring can be greatly simplified if you work with a definite size stop, and standardize your exposure practice. If at an eight-inch extension and any stop elected, the exposure is 10 seconds, it will be 2 x 2 x 10 or 40 seconds for 16-inch bellows, 2½ x 2½ x 10 or 62.5 seconds for 20-inch draw, etc. If you wish at this point to cut down below the standard opening, you figure as in regular practice.

The exposure required on various reductions with a definite stop, as compared to exposure for copies same size as original is given in decimal figures: Same size copies, unit exposure; ¾ size, 0.76; ½ size, 0.56; ¼ size, 0.39; 1-8 size, 0.31; 1-10 size; 0.30; and below this the figures vary but little and approach the limiting figure of 0.25.

You have choice of three positions for the filter, in front of the lens, between the lens and the plate, and inside the lens. While in ordinary work the filter shift of the image plane does not seriously bother you, in copying it may be of considerable moment, and good true filters are imperative. These must be both plane and parallel, as a wedge shaped filter, or an irregular one, has the effect of a prism. You must bear in mind in copying work that rays from near objects are quite divergent, whereas from distant objects they are practically parallel. A filter which will pass muster with a 6-inch lens may not stand up for 12-inch lenses. If irregularly warped, the definition is much degraded. The process worker not only must have accurately made filters, but they must also be exactly the same thickness, so that the image planes will shift equally.

A glass filter between the lens cells is out of the question, as the delicate corrections are then upset. Gelatine filters are very conveniently used in this way and where slots for Waterhouse stops are furnished, you can make a little holder by folding a thin sheet of dark paper so that the fold goes at the bottom of the slot, and then cutting a round diaphragm opening through both sheets. Sometimes the filter can be used with the stop where they fit loosely. The paper frame keeps your fingers off the filter, which is so thin that it has no optical effect.

When behind the lens, the focus is lengthened by one-third the filter thickness. A deformed filter is equally bad when it is right behind the lens, but not so serious at the plate, although, of course, the slightest speck or scratch on the filter is going to give you a shadow on the plate. Gelatine films have been used to minimize the cost of large filters at the plate, but it is hard to keep them clean. We have found in practice that a gelatine filter behind the lens on the back of the lens board is very convenient, when a regular filter and holder are not at hand.

You will note that the front and back positions have about equal advantages, but under certain conditions you occasionally get a filter flare from light which gets through the lens and reflects between the lens surface and the filter. It may then penetrate the lens and produce fog or possibly a flare spot. Behind the lens, it is harmless, and if any re-

BABY **JUVENTINO OCAMPO**

Third Prize, August Senior Competition

flected light comes through the lens, it is thrown forward out of the way. The rear position is quite feasible in copying, as the cameras used will generally have commodious lens boards.

The filter shift is backwards. It does not amount to anything on distant objects, but becomes noticeable on objects near the lens, as in copying. It reaches its maximum with copies the same size as the original. When the filter is behind, the lengthening is about one-third the thickness of filter but diminishes as the subject focused on approaches the lens. In practice, you focus with the filter in place and there is no serious difficulty.

Sometimes a photo-engraving prism is used in copying work. The focus change with this is analogous to that of a filter. Prisms have a filter effect, as thick or slightly tinted glass absorbs more violet than red. False images or flare effects sometimes occur with too wide an angle of view.

For precise work, you will need a fine-grained ground glass, which may be smeared with a little vaseline. Microscope cover glasses may be cemented on, first making a mark on glass with a fine pencil which shows through the clear circle which the Canada balsam and cover glasses have made transparent. We have seen a glass thus prepared with a tiny wire cemented between, a filament from a broken tungsten lamp. A good magnifier is used on the image, one in a tube which rests firmly at a fixed distance from the glass surface. This is focused on the mark, and the image brought to the same plane of focus. For focusing the margins, cover glasses at the corners may also be used.

The parallax focusing method is another variation. In this, the clear space is made by grinding or etching a glass screen with a protector pasted on, such as a tough piece of adhesive plaster. On this clear space a sharp-edged piece of tinfoil is stuck down. A magnifier like a cheap linen tester is adjusted to sharp focus over the tinfoil and then set permanently. Surgeon's tape will serve here. As the eye moves sidewise in viewing the image, you will see an apparent displacement. When there is no movement, the image and tinfoil lie in the same plane and at the critical focus.

Fine-grained focusing screens are easily made. Take three fast plates, unexposed, and develop them in metol-hydro without any restrainer. After four or five minutes, remove two plates and fix and wash. Remove third plate in 15 or 20 minutes. Make a solution of iodine and potassium iodide. Treat one of the underdeveloped plates and the last plate with this solution, rinse and bleach in dilute ammonia, wash and dry. You then treat the remaining plate with a solution containing 10 grains of potassium bichromate and 5 to 10 drops of hydrochloric acid to the ounce. Rinse, fix in clear hypo, wash and dry. The dense screen is an excellent substitute for your ground glass. The thin screen is of special value for your architectural work and copying. The last screen, the bichromate one, can only be used with a magnifier. You can rule lines on these screens with a sharp knife to give necessary reference marks. It is well to protect them with celluloid varnish.

No fine-grained screen is as luminous as a ground glass, but they show far more detail. All screens should be ruled with squares. You can then line up horizontal and vertical parts of the copy on the ground glass lines to quickly show when the copy and the screen are parallel.

Another device you may find useful is Le Clerc's focusing stop. This is a special Waterhouse stop with an opening across which is a bar with parallel edges, the width of the bar being about one-half the diameter of hole. When the image is out of focus, each image line which lies parallel to the direction of the bar is doubled. The two lines become one when you reach absolute focus.

You can always have a card with printed matter to focus on and some workers have a bit of fine lace on a string which they can drop down on face of copy. Your focusing glass should be fixed in focus as before stated and should preferably be of the achromatic type. Hand magnifiers and reading glasses are makeshifts. Their focus varies with distance from eye and screen, and the accommodation of the eye gives misleading effects in fine focusing. We have come across lens complaints where old-time workers have seen fit to criticize precise lenses they were trying out, the trouble really being in the focusing accuracy of the worker. You can readily see that when the lens is not critically focused, the stopping down will sharpen up the image, but there will be an apparent shift of the focal plane, not really a fault of the lens but merely that of technique.

Regular copying cameras have long square bellows, a central compartment for lenses, and a kit frame at one end for negatives which are to be copied by transmitted light or reduced to lantern slides. The lens boards may be substituted for kit frames to gain the full bellows capacity. To keep the camera front away from the copy, an extension cone is sometimes used. Such cameras for large sizes are Ingento No. 45, Crown, and Folmer and Schwing Enlarging, Reducing and Copying types, the last one having a tipping device on the kit frame for correcting distortion when copying. The Century Lantern Slide Cameras may be had in 5 x 7 size, with 36 inch bellows. The F. & S. Commercial Camera, 8 x 10 and 11 x 14, has a sectional bed and lens board movement independent of bellows.

Copying stands like the F. & S. Laboratory work horizontally or vertically, in con-

LE REMOULEUR EN PANNE J. SITEK

Second Prize, August Junior Competition

nection with cameras for copying. The Photomicrographic Stand is vertical only and of simpler construction. An old portrait camera makes an excellent substitute for a special copying camera, and a Post Card or Penny Picture camera can be bought new very cheaply and then adapted for small work.

View cameras of the type which focus from the back are most convenient. You must mount them on an improvised support so they can slide back and forth bodily, and any supplementary balancing beds should be taken off. Ingento Focusing Platforms, ordinarily used for enlarging cameras, can be utilized. The long-bellows, cycle type, plate models are excellent for copying, but as they focus in front, it is more convenient to move the easel or to lock the front of extension bed to the improvised platform so that the focusing pinion will force back the entire cameras just like the back-focusing types.

Copying with hand cameras with short bellows is only possible when supplementary lenses are used. On models like the Goerz Tenax, 3 and 3a, Ica and Contessa long-focus models, the long bellows gives copying facilities. Ango cameras have special extension backs for this purpose. Reflecting cameras of the reversible back type are excellent for copying up to their bellows limits, which give images a little over natural size.

Direct enlarging is copying on an enlarged scale. You simply reverse your conjugate figures. The greater distance is now the camera extension, and the lesser one the object distance. If the lens is not symmetrical, you will have to reverse it, facing it the other way, so it will work the way it was corrected. This does not refer to regular enlarging cameras where the lens goes on just like any ordinary camera. The camera front is very near the subject with short-focus lenses. With long-focus lenses the extension becomes very great, so that enlarging by projection methods is generally more convenient.

DEPTH AND SHARPNESS

H. G. CLEVELAND

As a basis for our consideration of depth and sharpness we will make use of the three following formulae: —

$$(1)\ \text{Hyperfocal Distance} = \frac{(\text{Focal Length})^2 \times \text{Reciprocal of Disc of Confusion}}{f\ \text{Value} \times 12}$$

$$(2)\ \text{Nearest Distance} = \frac{\text{Hyperfocal Distance} \times \text{Distance Focused}}{\text{Hyperfocal Distance} + \text{Distance Focused}}$$

$$(3)\ \text{Farthest Distance} = \frac{\text{Hyperfocal Distance} \times \text{Distance Focused}}{\text{Hyperfocal Distance} - \text{Distance Focused}}$$

From a consideration of formulae (2) and (3) it will be seen that the nearest and farthest distances in the belt of focus are dependent on the hyperfocal distance when the distance focused remains the same. From this we see that with lenses of various focal lengths we can get the same belt of focus or depth if the lenses can be adjusted so as to get the same hyperfocal distance.

Let us now consider formula (1) for obtaining the hyperfocal distance. Assuming that the hyperfocal distance is to remain the same for the lenses of various focal length, if the same degree of sharpness is desired in the contact print regardless of the size of image, then the reciprocal of the disc of confusion will also remain the same, and the figure 12 remains the same as this is simply inserted to reduce the result from inches to feet. This leaves but two variables, the focal length squared, and the *f* value. A little consideration will show that to obtain the same hyperfocal distance, the (focal length)^2 divided by the *f* value must remain the same. That is, if the square of the focal length is ¼ as great as that of another lens with which we have previously determined the hyperfocal distance, then the *f* value will be ¼ as great, or if the *f* value of the lens of longer focus was *f* : 16, then the *f* value of the lens of shorter focus for the same hyperfocal distance and also same belt of focus would be *f*:4. Thus it will be seen that the *f* value to obtain the same depth of focus in a contact print is dependent on the square of the focal length, which is the form this formula resolves itself into when we consider the *f* value as *f*:1.

Taking the above into consideration, we can construct a table showing the equivalent *f* values for lenses of various focal lengths by placing opposite each its square and considering this as the *f* value. Then by halving and doubling these squares, etc., we can construct a table giving various comparative *f* values for lenses of various focal lengths for

A COOL RETREAT C. V. HEWITT

First Prize, August Junior Competition

the same depth and sharpness in contact prints. Such a table is appended herewith for a few focal lengths.

TABLE 1

F. L.	F. L.²	Comparative *f* Values for Same Depth and Sharpness in Contact Prints.														
3″	9″							3.1	4.5	6.2	9	12	18	24	36	48
4″	16″					2.8	4	5.6	8	11	16	22	32	44	64	88
5″	25″				3	4.5	6	9	12	17	25	34	50	68	100	
6″	36″			3	4.5	6	9	12	18	25	36	50	72	100		
7″	49″		3	4	6	8	12	17	24	34	49	64	98	128		
8″	64″	2.8	4	5.6	8	11	16	22	32	44	64	88	128			
9″	81″	3.5	5	7	10	14	20	28	40	55	81	110				
10″	100″	4.5	6	9	12	17	25	34	50	69	100					
12″	144″	6	9	12	18	24	36	49	72	99						
14″	196″	8	12	17	24	34	49	68	98	135						
16″	256″	11	16	22	32	44	64	88	128							

As stated above, this table will give the same depth and sharpness in the case of contact prints, regardless of the size of the various images. Now let us give some consideration to obtaining the same depth and sharpness with various focal lengths when the images are enlarged to the same size. In this case the considerations are the same as in the first case except for the fact that the disc of confusion would vary in proportion to the focal length. This can easily be seen from the following. The image with a 5″ lens is half as big as that with a 10″ lens. Therefore the diameter of enlargement with the 5″ lens to obtain the same size image as with a 10″ lens would be twice as great. Now assuming that the disc of confusion with the 10″ lens is 1-100″, since the 5″ lens is ½ the focal length of the 10″ lens, the disc of confusion with the 5″ lens would be 1-100″ x ½ = 1-200″. Now if the size of the image is enlarged 2 times, the size of the disc of confusion is also enlarged 2 times, making it 1-100″ or the same as that with the 10″ lens for the same size image.

Inasmuch as Table 1 was constructed from the squares of the focal lengths, and in this case the discs of confusion vary in proportion to the focal lengths, for Table 2 we may take $F.\,L.^2 \div FL = F.\,L.$, or in other words this table may be constructed by considering the focal lengths as the *f* Values, and halving and doubling as in the case of Table 1. Such a table constructed for a few focal lengths follows:

TABLE 2

F. L. Comparative *f* Values for Same Depth and Sharpness When Images Are Enlarged To Same Size.

3″			3	4.1	6	8	12	16	24	32	48	64
4″			4	5.5	9	11	16	22	32	45	64	90
5″		3.4	5	6.8	10	13	20	26	40	52	80	
6″	3	4.1	6	8.2	12	16	24	32	48	64	96	
7″	3.5	4.8	7	9.6	14	19	28	38	56	76	112	
8″	4	5.5	8	11	16	22	32	45	64	96	128	
9″	4.5	6.1	9	12	18	24	36	48	72			
10″	5	6.8	10	14	20	27	40	54	80			
12″	6	8.2	12	16	24	33	48	66	96			
14″	7	9.6	14	19	28	38	56	76	112			
16″	8	11	16	22	32	44	64	88	128			

In case it is desired to obtain the same depth and sharpness by enlarging the images to the same size it is also convenient to know the proportionate amount of enlarging necessary, which is in inverse proportion to the focal lengths. Such a table follows for some focal lengths and various viewing distances:

TABLE 3

Viewing Distances

F.L.	12″	18″	24″	36″	48″
3″	4.0	6.0	8.0	12.0	16.0
4″	3.0	4.5	6.0	9.0	12.0
5″	2.4	3.6	4.8	7.2	9.6
6″	2.0	3.0	4.0	6.0	8.0
7″	1.7	2.5	3.4	5.0	6.8
8″	1.5	2.2	3.0	4.4	6.0
9″	1.3	1.9	2.6	3.8	5.2
10″	1.2	1.8	2.4	3.6	4.8
12″	1.0	1.5	2.0	3.0	4.0
14″	.85	1.3	1.7	2.6	3.4
16″	.75	1.1	1.5	2.2	3.0

MASTER JACK

W. A. MACQUOWN

Honorable Mention, First Annual Competition

CHEAT RIVER, WEST VIRGINIA — CHARLES K. ARCHER

Pittsburgh Salon, 1922

geous to those photographers who have various lenses of different focal lengths, and who desire to get similar results when using these different lenses. Of course it must be understood that no two lenses even of the same make will give identical results. Therefore we must not expect to get the same results with an R R. lens or an achromatic as with an anastigmat. However, we may have one lens with which we are fully familiar. In this case, by making use of these tables, we can obtain similar results with lenses of other focal lengths with which we are not so familiar, with much more certainty than otherwise. As an example, I have a tri-convertible anastigmat, *f*:6.8, focal lengths 6″, 11″, 14″, and in using the single 11″ and 14″ elements my contact prints did not have the degree of sharpness desired, and I was beginning to blame the lens when I constructed Table 1. Then I took three pictures of the same thing with these three lenses, setting as indicated the 6 ″ at *f*:8, 11″ half way betewen *f*:22 and *f*:32, and the 14″ at *f*:45, when I discovered that although the sizes of the images varied, the sharpness was the same, as near as could be distinguished. These stops are much smaller than the manufacturers claim to be necessary to obtain sharp pictures; yet they are necessary for the same degree of sharpness in contact prints.

Our prints must be made either the same size as taken, or either larger or smaller. If it is desired to obtain the same amount of sharpness and depth in a contact print or a print of the same size as taken, we make use of Table 1.

In looking over these tables it will be noticed that the *f* values are not in most cases the same as those marked on the shutters. However, it will only be necessary to set the

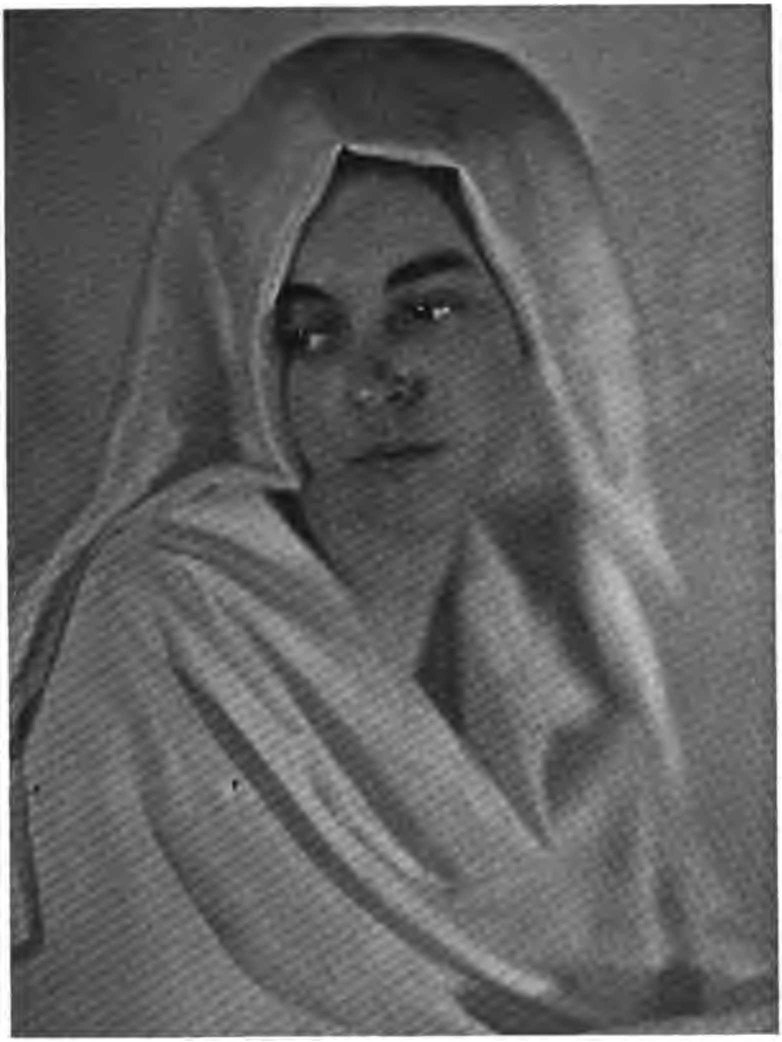
THE POOL IN THE PATIO R. C. LEWIS

Pittsburgh Salon, 1922

diaphragm as close as can be judged to the value indicated in the tables, as the error in setting will be so slight that the variation from the correct setting will be too small to notice any difference in the image.

If our prints are to be enlarged or reduced, then to get the same sharpness and depth, Table 2 should be used. In this case if we are working with various elements of a triconvertible set, it is only necessary to keep the diaphragm of the shutter set at the same opening, but this table is advantageous in the case of using lenses on different cameras or in different shutters. When it comes to enlarging these negatives we should make use of Table 3, and also make notation of the viewing distance for future use when viewing the enlargement. In case the diameter of enlargement is different than indicated in the table, the viewing distance can, of course, be changed accordingly, so long as we know what the viewing distance is.

Furthermore, we either focus the image by focusing scale or by viewing the ground glass. In case we focus by scale, we can make use of the belt of focus Table 4, noting the stop for lens of 12″ focus, and using the corresponding stop for the focal length in use, according to Table 1 or 2, according to whether we intend to enlarge or not. For greater or less sharpness for some specific purpose, we can still further vary the diameter of the diaphragm, knowing just exactly what degree of sharpness we will get.



MEDITATION ANNA M. SMITH

Honorable Mention, Second Annual Competition

In case we view the image on the ground glass instead of focusing by scale, it may be argued that these tables are not necessary. Nevertheless in the case where enlargements are going to be made, the image on the ground glass will not indicate the degree of sharpness in the enlargement. In this case, to get the degree of sharpness desired in the enlargement, it is only necessary to focus on the ground glass for the degree of sharpness you wish in the final enlargement. Then, using Table 2, correct the *f* value from the focal length being used to that indicated for the 12″ focus. Then by enlarging according to Table 3 and viewing the print accordingly, the same degree of sharpness is obtained.

Even in case no enlargement is to be made, still it is not always possible to judge the degree of sharpness of the image on the ground glass with the degree of accuracy desired. In this case it might be advantageous to consult the belt of focus table, focus sharply on the distance indicated in same, and set at the stop as previously explained. The belt

HELEN J. G. SARVENT

Pittsburgh Salon

of focus table is also advantageous in determining the distance at which the camera must be placed in order to get the desired depth with the stop in use.

When using tables 1 and 2, there may be occasions when it is not possible to set the diaphragm as indicated, the *f* value being too small or too large, or for some other reason. In these cases the tables are still of value for determining the comparative amount of sharpness which is being obtained with the *f* value which is being used, as each column to the left of the one which should be used indicates 50% less sharpness, while each column to the right indicates 50% more. A thorough study of these tables will indicate many other uses to which they may be put advantageously.

THE DELL JIRO ITO

which the main features have just that suggestion of color which so materially assists in adding atmosphere and atmospheric perspective where otherwise the methods of production hardly permit those desirable features to exist.

The method of tinting slides which is here to be described is a simple one, and no knowledge of artistic manipulation is necessary in order to produce decidedly pleasing results. The one thing which must be borne in mind is to apply all tints lightly; it is a suggestion of color rather than the actual thing that should be aimed at, otherwise we shall soon find ourselves encroaching on those wonderful emerald skies with purple clouds so dear to the heart of the professional "brother brush." A finger-dabbed firmament in Prussian blue is more suited to the "Bertillon" system of identification than the regarding of an artistically appreciative audience; we cannot, therefore, too strongly insist on the necessity of avoiding bold coloring, as the unavoidable crudeness of the more transparent colors absolutely compels careful and discriminate use in order to maintain that mellowness of tone peculiar to nature.

The clearest way of showing the method to be employed when tinting gelatine transparencies will be to imagine a subject, such as a landscape, composed of sky, distance, and foreground with foliage; but before commencing on our subject it will be well to draw up a short list of the materials required; and to avoid the trouble of mixing tints a fairly full palette should be selected.

My own plan has always been to purchase one pennyworth of the aniline color in crystal form, and then dissolve it in two ounces of distilled water. This is a decidedly vague receipt, but its simplicity should prove a recommendation, and, after all, the strength of the color is immaterial, provided it be not too weak to give the deepest tone desired. Colors can, of course, be thinned to any extent by adding water to them on the palette.

With regard to brushes, two, or at most three, will suffice—a camel-hair mop, about the size of the little finger, and two sables of different sizes, both fairly small. These are the absolute essentials, and nothing else is required, unless, when dealing with some exceptionally difficult and intricate subject, in which case crystal varnish and an additional brush are provided.

We will now commence work on our imaginary transparency, consisting, as above indicated, of sky, distance, and foreground, with foliage. The colors required will be blue, brown, and red. Place the transparency in a convenient-sized dish (say, 4 by 5) to soak, leaving it there for about five minutes, and while this is taking place mix a little of the blue with about four times its bulk of water on the palette. Now take up the transparency in the left hand, and after slightly draining it hold it in a horizontal position, and mop on the pale tint of blue, so as to cover the entire surface, including sky, distance, and foreground. As soon as the gelatine is lightly stained (say, in two to four minutes) plunge the transparency in the dish of water to remove the surplus color, and then lift it out, this time keeping the plate vertically inclined, with the sky downward. More color must now be mopped on to the sky, beginning at the horizon, and allowing it to flow toward the zenth; finally, when the sky is dark enough, the surplus must be once more washed off by immersion in the water dish. At this stage allow the slide to dry for about five or ten minutes in a horizontal position; face down, with the four corners resting on an old plate box, is the best way, as it lessens the danger of dust falling on the moist gelatine.

The brush should now be well washed and some clean water placed in the dish preparatory for the second painting.

Take some of the brown tint and mix it with water on the palette, taking care that the color be not too strong. Now hold the slide over the water dish, sky upward, and go over the distance, foreground, and foliage with a clean brush dipped in water, and afterward with the brown. By holding the slide almost horizontally, the brown color may be accumulated on it, the greater depth, however, being allowed to rest on the immediate foreground. It is by this method of flowing the tint, much as varnish is used on a negative, that the most delicately graduated tones are obtained, and the color may be worked from the palest of yellows in the distance to a tint of gradually increasing strength, which adds wonderfully to the effect of distance, and hence atmosphere, and at the same time brings the foreground up to our very feet.

As soon as the brown has done its work the surplus color must be removed by plunging the slide in the water dish, and after a very little draining it may again be partially dried for five to ten minutes, while the brush is again washed and the water in the dish changed.

The general appearance of the slide now, if all has gone well, is a graduated blue sky considerably stronger at the zenith than at the horizon, while the remainder of the picture is graduated from distance, or even the tops of the large trees, to the foreground in a mellow tint of green in gradually increasing intensity.

ACROSS THE LILY POND (*see page 656*) HAROLD B. NEAL

The third and last tinting consists in applying a second coat of brown to such parts of the foreground as are best represented by that color, always being careful to go over the part with a wet brush first, and finishing without washing the slide, as in previous paintings. The distance is sometimes much improved by filling the brush with a very thin tint of red and then passing it once or twice gently along the horizon, thus slightly warming both sky and distance. If there are any figures in the picture they should be picked out in much stronger tints than have hitherto been used, and this should be done when the gelatine has dried for a quarter of an hour or more, in order to avoid the stronger tints running, which they are very apt to do if the slide is too moist.

This practically concludes the simple process, and if entire satisfaction is not felt in the result, twenty-four hours' immersion in a pint of water will remove every trace of color without doing the slightest harm to the transparency, which may be retinted and washed several times until the desired effect is attained.

BUBBLES IN LENSES

Bubbles in lenses are the subject of many comments in the photographic press. It must not be lost sight of, however, that while they are generally harmless, a bubble which is cut into by grinding operations and left filled with polishing rouge, is quite another matter. A central bubble in a tiny wide angle lens is very bad, as when stopped down the bubble becomes relatively large in relation to the diaphragm aperture.

THE DELL

We are getting used to hearing people make such remarks as "it looks more like a painting than a photograph," for the semi-achromatic lenses when skilfully used seem to be able to splash sunlight into the negative very much in the same manner as a painter would splash it on with a brush, and the slight fringe of halation around the highlights when a strong light and a dark shadow come together is a painter's trick of softening outlines. When the photographer regulates exposure and development so that he gets correct tones, so correct that they suggest color as correct tones will do, the photograph might just as well be a copy of a good painting. And yet there are some who consider photography "mechanical" and who deny the possibility of its being classed among the fine arts. In the simple but very effective little print, "The Dell," we have an example of the power of the camera and lens to treat a subject pictorially. The subject is a simple one of no great topographical interest, and the beauty of the picture is due to the way in which the subject has been treated. The result is very much like a copy of a painting, which proves that an artist who uses a lens can make pictures just as well as an artist who uses brushes and paints. Made in a suburb of Yokohama with a Thornton-Pickard half-plate stand camera fitted with a Verito lens of 8¼ inches' focal length, used at *f*:5.6, Ilford Screened Chromatic plate, good light at 1.15 P. M. in February, exposure ⅕ second, print on "Cellofix" self-toning paper, extra rough, cream.

ACROSS THE LILY POND

The "pattern" of this picture is very similar to that of a picture by Joseph F. Westgate reproduced on page 248 of the issue of AMERICAN PHOTOGRAPHY for April, 1922. We have in this case a rather too regular and not entirely satisfying arrangement of rectangular strips. The trees on the left cut off about one-third of the space vertically, and the remaining two-thirds is cut into three almost equal horizontal strips. The interesting lines and masses in the foreground almost save this picture, though they are not quite strong enough to hold the interest. Although almost everything else is mentioned, the picture maker, in gaving the data, omitted to give any information as to the exposure that was given in making the negative. From the appearance of the print, we would be inclined to think that it was not quite sufficient, for there are signs of underexposure in the shadows. In a picture like this, where there is no definite point of interest, a well placed accent would help considerably. There is a very conveniently situated rock in the foreground and if there had been a girl dressed in white (so that she would contrast strongly with the background), sitting on the rock, but not obviously posing for a picture, the artistic value of the picture would have been strengthened very much. Made in Boston, with a Seneca View camera, 8 x 10, Voigtlander Collinear II lens, used at *f*:22, sun behind white clouds, May 30th, 1920, Hammer double coated ortho plate developed with M. Q., print on Professional Cyko, studio surface.

DEVELOPING GASLIGHT PRINTS

The greater number of photographers who use it appear to develop gaslight paper in a bath of developer, immersing each print entirely in the liquid. Having developed a good many gross of gaslight prints up to 8 x 10 in the way I shall presently describe, this mode of immersion, used by many, appears to me particularly wasteful. There is also the chance of air bells, etc., which frequently show on prints so developed, and the developer is so much sooner worked out. Of course, I do not claim any novelty in this method, as I did not originate it, but I have never noticed this way mentioned in the many articles on gaslight papers that I have read.

I use generally a plate of glass, clean, and 8 by 10, or larger, in size, and, in my own case, lay this across two narrow pieces of wood, which in turn lie across a tray larger than the glass. On this glass the developing is done, and the tray underneath is merely to catch the drip and prevent it going all over the table or whatever one may be working on.

If you have the luxury of a sink and water tap in your darkroom, you can put the glass over the sink. Near at hand I have a small measure glass, with, say, 1 ounce of developer in it, and at one side a tray of clean water. After exposing the print as usual, it is placed face up on the glass, and, taking a piece of absorbent cotton, dip it in the developer in the measure glass, getting it thoroughly wet, and then rub it over the face of the print, first lengthwise, and then across, or *vice versa*, not forgetting the edges, which sometimes appear to have a habit of coming out a little slower than the center.

Continue the rubbing until all streaks have disappeared and the picture appears even and sufficiently dark, then transfer to the clean water for a rinse, and immediately put into the acid hypo bath.

The rubbing, of course, must not be too hard, though it is wonderful what the paper will stand. Rough surface paper must be especially gently dealt with, and the edges of all grades must be gone over carefully for fear of turning up the thin film of emulsion.

Prints can be wetted before developing, if preferred, but in this case the water should be allowed to drain off a little, and it will be found that the developing will take a little longer, in consequence of the slight dilution of the developer. The wetting of the print first will, however, insure even development, and it is advisable in the case of prints larger than 6 by 8. Personally, I prefer to develop the dry print.

A certain amount of local development can be done in this way, by rinsing off the developer when most of the print appears finished, and applying the cotton to the part which is slow in appearing. But it is advisable always with gaslight papers to expose properly rather than to force any part, as prolonged development almost invariably produces stained prints.

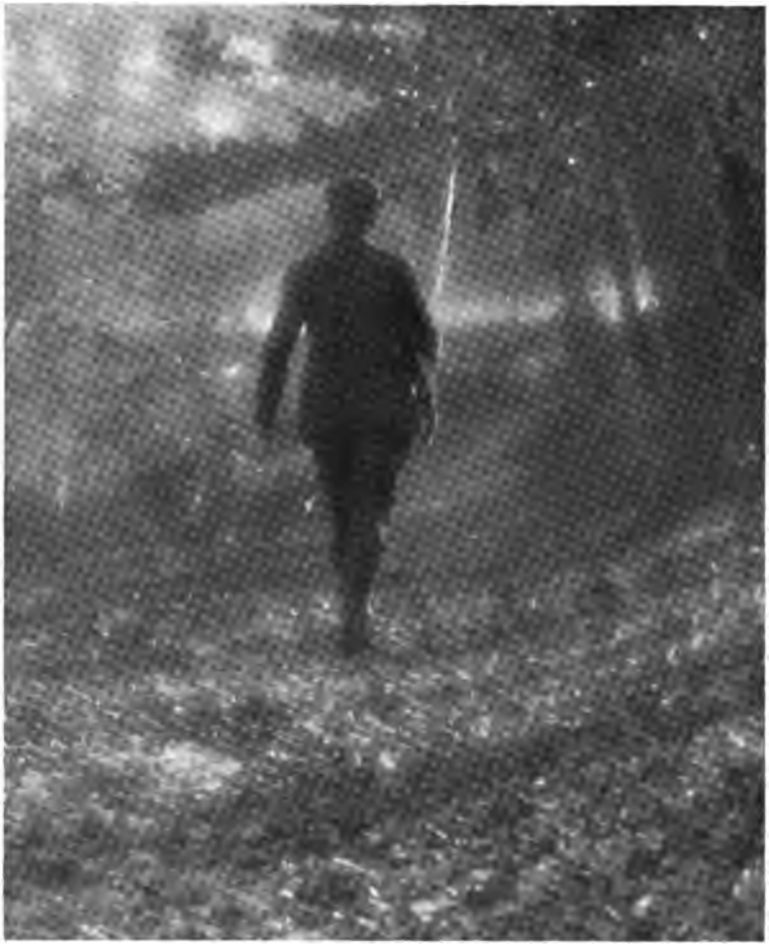
Remember to rinse off the glass plate every now and then, and to take a new piece of absorbent cotton for, say, every three or four prints. Absorbent cotton is cheap, and using one piece too long may result in brownish or greenish prints. The size of the piece of cotton may be left to the worker. The writer uses a piece about the size of a large walnut.

Using this method of development, it is really surprising how many prints can be done with a very small quantity of developer, and as to the question of time employed, I find it as quick a method as any other I know of, and I have a good deal of this work to do in a commercial way.

One other note I would like to add. Prints can be dried unmounted best by placing them face down on clean white cotton cloth or calico, provided the fixing bath contains alum, as in the bath prescribed for Velox, or Cyko paper. If alum is not used they will possibly stick to the calico.

GOING FISHING

The landscape portion of this is very interesting as an example of the work of a soft-focus lens used at its widest aperture, and with the front combination removed. It is very much diffused, but at a little distance it "closes up" very effectively and is perfectly coherent. It has an unusual amount of depth and atmosphere. The figure is rather unfortunately placed in the picture space, but it is very expressive and suggests action and energy very strongly. If it were a little out of the center it would have improved the composition. If it is possible to remedy this by making another enlargement and including more at the top and one side, preferably the right, we would strongly advise this being done, but if the negative does not permit of this, the only way in which the placing can be improved is by trimming.



GOING FISHING JOHN N. CONSDORF

It is rather a pity the fishing rod happened to catch the light so strongly. We think it would be advisable to work out this white line by hand on the print and draw in a fishing rod that looks more like the real thing,but this will have to be done very carefully. 3¼ x 4¼ Graflex camera, Verito lens, rear combination only, of 7 inches' focal length, used at f:4, good light at 10 A.M. in October, exposure 1-40th second, Standard Orthonon plate developed with pyro-soda, enlargement on P. M. C. Bromide paper, No. 6.

SHADOW SIDE OF THE FACE

Contrasts are always stronger in the photograph than they appear to the eye. Frequently the shadowed side of the face seems to our vision full of the richest detail and truly our eye is not deceived for the detail is there, but in the finished portrait we discover, for some unaccountable reason, our deduction being based on appearances, that the expected luminous shadow areas have degenerated into mere meaningless black masses.

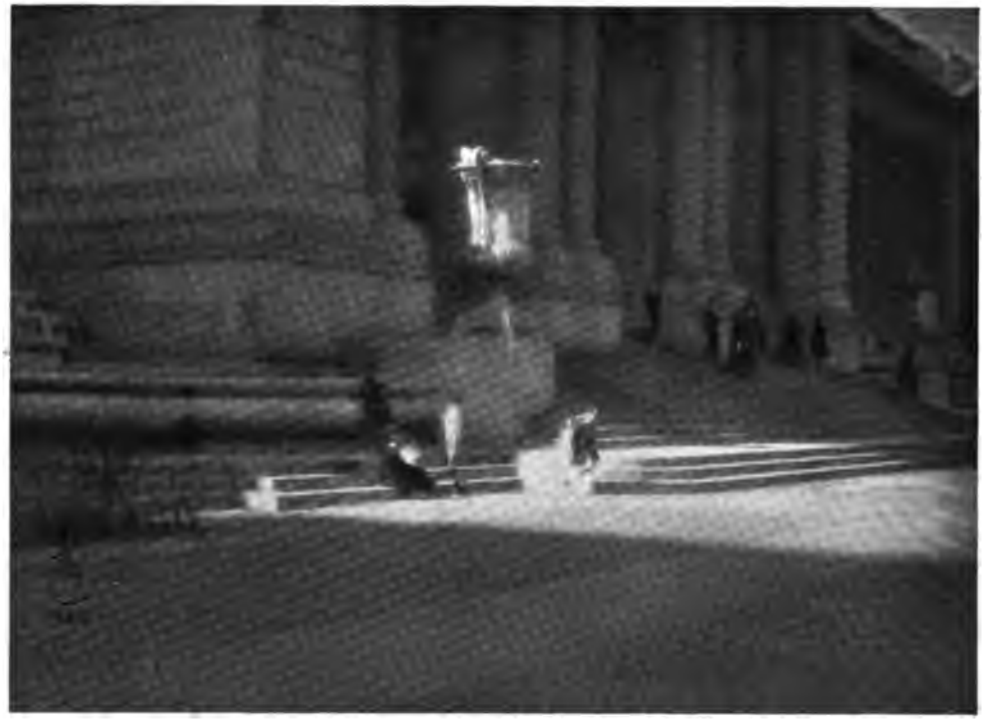
The eye is thus contributory to a false judgment of what the light is really effecting upon the film. We must not forget the influence of the mechanical phase of our art. We must bear in mind that the art is not in the camera or plate, but in ourselves. The plate remorselessly registers intensities without appreciation of exterior appearances.

When we predetermine that the shadows shall not disappoint our artistic expectation, we must take precaution that the unmeaning black areas do not predominate. We must either introduce direct light on the shadow side or rearrange the illumination to throw light in that particular part. To the trained eye the effect produced is at once manifest and the improvement directly visible.

By increasing the amount of front light, the time of exposure is relatively shortened. The whole scheme of illumination is more harmonious. The light and shadow contrast more and more decidedly by moving the model toward the source of light.

It is best to use the reflecting screen with caution. That is, use judgment, and do not overdo the shadow side and obliterate the fine detail.

The good agency of the reflected light from the floor or the walls of the studio is not always appreciated. It often is valuable in lighting up the shadows. Every radiating object near the sitter



FOUR O'CLOCK AFTERNOON TOSHIO SOGA

acts as a reflector and sometimes it happens that an unexpected blessing is conferred, a charming result obtained without the operator's intention or the divining of the immediate cause of success.

This kind angel in disguise may have been the book which the artist placed in the hand of the model to complete the composition, but he builded better then he knew, or it may have radiated from the drapery or the garment of the model. Whatever the cause, the credit belongs to the photographer, provided he understands the cause and subsequently appropriates it.

4 O'CLOCK AFTERNOON

From the title of this picture we would judge that the maker of it deliberately and intentionally selected that particular time of day at which to make the exposure and we think he is fully justified. The splash of sunlight just striking the urn and the corner of the steps is decidedly effective, and saves the picture from being merely a record of topographical interest. The sunlight makes it pictorial. Sunlight is the theme of the picture, and the building and everything else is merely the setting for the theme. The quality of definition is very fine, showing that the lens was used with skill and experience, and the picture is one of unusual pictorial interest. We think we would have emphasized this splash of light even more by trimming off enough from the top of the print to remove the patch of sky in the right hand upper corner; however, this has been darkened and is not very obtrusive. Made in New York City with a Speed Graphic 5 x 7 camera, Wollensak Verito lens of 9 inches' focal length, used at *f*:4, good light in April at 4 P. M., exposure 1-75th second, Eastman Seed 30 plate developed in M.Q., printed on Artura E.

DIRECT POSITIVES ON BROMIDE PAPER

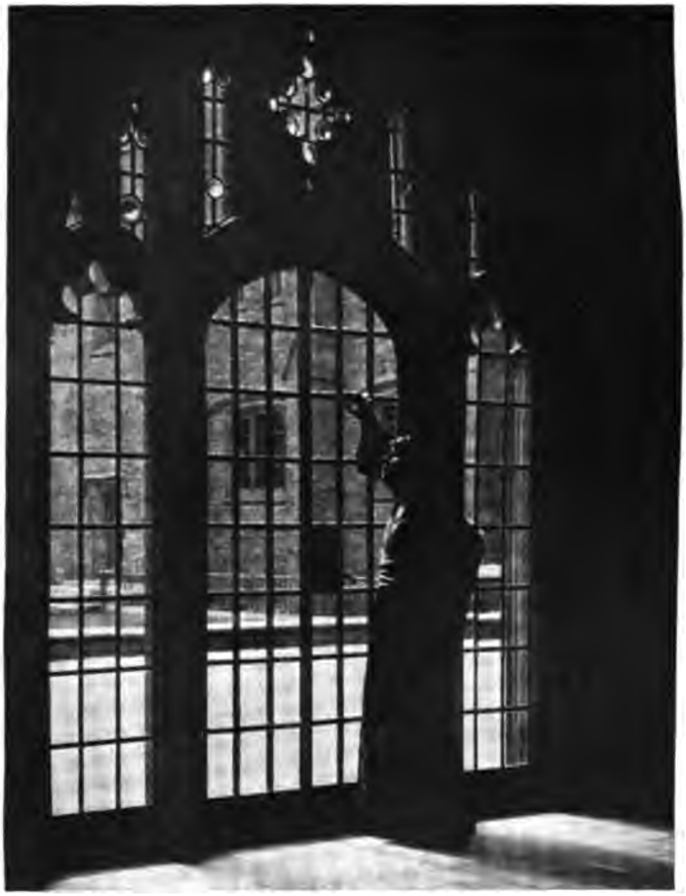
For rapidly copying documents, articles in journals, line drawings, etc., a direct photograph on bromide paper is very satisfactory if the photograph is made through a prism to avoid reversal. A well-known example is the use of the Photostat machine, in which the operations of development and fixing are performed automatically after exposure in the camera, the paper being cut off from a roll, so that a great number of photographs can be taken in succession. This method, of course, produces a negative, and for much work a negative has no disadvantages. On most occasions, however, a direct positive is desirable, and such positives can be obtained on the bromide papers used for copying work, by two different processes.

The first method is the well-known one whereby the developed, but unfixed, print is bleached out in an acid permanganate bath, and the residual image of silver bromide exposed to light. This, on development, gives a positive black-and-white image. Good results are obtained by observing the following instructions.:

The exposure must be sufficient so that development is complete in about two minutes, using the developer recommended for the particular paper used. After washing the print for five minutes it must be bleached by bathing for one minute in the following bleach bath:

Potassium permanganate..............	30 gr.
Sulphuric acid (strong)..............	150 min.
Water................................	32 oz.

Rinse and immerse in a dilute solution of sodium bisulphite to remove the brown stain, working in full daylight, and rinse and develop in the developer first used; then fix and wash in the usual way.



EVENING THOUGHTS — GORDON SPARLING

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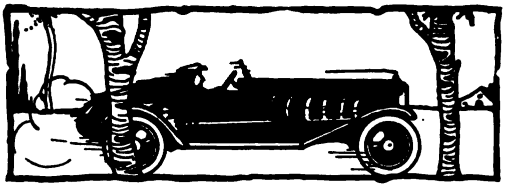
arrangement of the subject. We think, however, that a slightly longer exposure would have tended to give a less contrasty print, and a trace of detail in the shadows which would have been an improvement. Made in Toronto, Canada, Graflex camera, Wollensak lens of 7 inches' focal length, stop *f*:16, strong light at 4.30 P. M. in June, exposure 1-25th second, Premo film pack developed with pyro, enlargement on P. M. C. No. 9, toned blue.

MOUNTING THE FILTER IN WIDE ANGLE WORK

Filter mounts sometimes cut into the field of view when used with extreme wide angle lenses; the thicker the filter, the more chance there is of a cut-off. The filter changes the direction of the light rays as they pass through, but, if the filter is optically true, as it should be, the rays emerge parallel to their original direction. A very easy of overcoming any difficulties of mount interference when using an extreme wide angle lens on a view camera is to use a gelatine film filter pinned on to the back of the lens board, over the hole in the lens board. This usually can be done, because a wide angle lens very seldom projects through.



THE PHOTOGRAPHIC REVIEW

E. J. Wall, F. C. S., F. R. P. S.

Chromate of Silver Prints — Chromate of silver is said to be not sensitive to light under ordinary conditions and to be one of the permanent salts, yet prints can be prepared by a process of substitution. Dissolve sixty grains of sulphate of nickel in 1 ounce of distilled water and add ½ ounce of saturated solution of potassium bichromate. Brush this over paper in yellow light and dry in the dark. Expose under a negative, to sunlight if possible, until the paper which at first turns brown becomes white, and then pass quickly over a weak silver nitrate solution. Almost instantly a fine positive of silver chromate is said to be formed, which only requires washing in water.

Another method is to print on collodion paper until the image is entirely bronzed, in fact the image may appear lost and the whole paper black. Wash thoroughly and then immerse in:

Hypo	1 oz.
Water	16 oz.
Potassium bichromate, sat. sol.	½ oz.

to which add a drachm or two of citric acid solution, 60 grains to the ounce. Place the prints in this until they turn a brick red and all mottling disappears, then wash and dry. The object of the deep printing is said to be the formation of an image composed partly of metallic silver, so that the chromic acid of the bichromate can attack it and convert it into the chromate by substitution, which is considerably aided by the citric acid. In fact the converting action does not take place until this acid is added (*Camera*, 1921, **25**, 431). The statement that silver chromate is not sensitive to light is not quite true. As a matter of fact Vacquelin, who discovered chromium in 1798 (*Ann. d. Chim.*, 1798, **25**, 21) stated that chromic acid formed "un précipité du plus beau rouge de carmineau," a beautiful red precipitate, with silver nitrate, which turns purple in light. In 1809 (*Ibid.* **70**, 70) he stated that silver chromate browns in light. R. Hunt in his *Researches on Light*, 2nd edit., 1854, points out the change of silver chromate. And Mungo Ponton (*Edin. Phil. J.*, 1839, 169) was led by his experiments with this salt to the discovery of the light sensitiveness of bichromated colloids, which now forms such an important branch of photography. With the first formula, some nickel oxide would probably be formed and it is quite possible that there might be silver chromate formed. In the second case we have merely the reducing action of bichromate in the presence of hypo, that is to say the black overprinted image is merely reduced by the bichromate. The citric acid, which is said to be essential for the success of the process, merely decomposes the hypo and gives rise to sulphur toning, and there is no silver chromate formed at all.

Since the above was written I have stumbled on the fact that this so-called chromate printing was first published in 1907, and was abstracted in an English publication, with the following comment: "We usually ignore in this section of the——— recommendations — and there are many of them — which are palpably impracticable or unsound, but the fact of the above suggestion emanating from a writer whose so-called researches appear in almost every American photographic paper renders it advisable to point out that Mr. ———'s toning mixture is nothing more or less than a sulphur toning bath produced by the action of the potassium bichromate upon hyposulphite of soda. In suggesting that the prints consist of silver chromate, Mr. ——— puts forward not a single fact in substantiation. In short, his process is a rapid and effective means of spoiling good collodion paper.— *Ed.*"

Soap Prints — To prepare these dissolve about 20 grains of pure hard cocoanut oil soap in 4 ounces of water and add gradually about 40 grains of potassium chloride; allow the mixture to stand for an hour and strain off and squeeze out the curd. Float paper in the liquid in the ordinary way and dry. Sensitize on a bath of silver nitrate 60 grains to the ounce by floating, which is better than brushing on, dry and print. After the print is removed from the frame plunge into weak acetic acid, about 1 in 128, and allow to remain for some minutes. Tone if desirable in an acetate of soda and gold bath and wash (*Camera*, 1921, **25**, 474). The action of the chloride is merely to precipitate the soap and there would be none left, so that the salting solution would only be the potassium chloride plus possibly some impurities. One can hardly call such soap prints, and we are left in doubt as to whether the prints are to be fixed, as nothing is said about this. It is possible to prepare silver salts of the fatty acids as used in soaps; but they are all very slow as compared with silver chloride and do not as a rule give intense prints, as proved by Marktanner-Turneretscher (*Sitzber. k. Akad. Wiss. Wien.*, 1887; *Cassell's Cyclopaedia of Phot.*, 1912, 490).

The First Photograph. — G. Cromer defines the word photograph as the image of an object drawn by the camera and registered in a durable manner on a sensitive surface. He recalls the fact that Davy obtained silhouettes by means of the solar microscope on paper impregnated with silver chloride, but that he could not fix them. Herschel discovered the solvent action of the hyposulphites on the silver salts in 1839. Daguerre announced his discovery in the same year, and this was led up to by Niepce's communication of his process with asphalt on tin. An excellent facsimile letter by Niepce is reproduced, and from this it is clear that as early as May 26, 1826 he had obtained permanent photographs on tin by means of asphalt. The letter is written to his nephew, Isodore Niepce, and he states that he had obtained some new tin plates that he had found to give the best results "pour les points de vue d'aprés nature." Fouqué (*La verité sur l'invention de la photographie*, 1867) and Potonniée (*Bull. Soc. franç. Phot.*, 1921) contend that Niepce had obtained photographs on glass by the asphalt process as early as 1822 (*Bull Soc. franç. Phot.*, 1922, **64**, 69).

Keeping Ferricyanide Solutions. — These, it is probably well known, are difficult to keep, and it is recommended to add to the solution twice the weight of common salt, and to keep the solutions in yellow glass bottles and in the dark. (*Photo. Ind.*, 1922, 176.) One of the best things to do is to add a crystal or two of potassium bichromate to the solution and boil and immediately bottle up.

A WELL-BALANCED DEVELOPER — C. S. Livingston gives the following as a universal formula for plates and films of all kinds, though with some, development must be carried apparently much further than it should be. For those who want mighty good detail, and well rounded out softness, this is the developer:

No. 1

Water	1000 ccm	32 oz.
Sodium sulphite	15.5 g	½ oz.
Oxalic acid	1 g	15 gr.
Pyrogallol	31 g	1 oz.

No. 2

Water	1000 ccm	32 oz.
Sodium sulphite	62.5 g	2 oz.

No. 3

Water	1000 ccm	32 oz.
Sodium carbonate	15.6	½ oz.

No. 4

Water	1000 ccm	32 oz.
Metol	1.3 g	20 gr.
Hydrochinon	3.25 g	50 gr.
Sodium sulphite	15.5 g	½ oz.
Sodium carbonate	15.5 g	½ oz.
Potassium bromide	3.25 g	25 gr.

Mix all in the order given, and for use take 4 parts of each of the solutions and add 16 parts of water. More water will increase the softness and less will diminish it, lessening the time to develop (*Abel's Phot. Weekly*, 1920, **26**, 471).

A NEW HYPO-ALUM BATH FOR SEPIAS. — S. Zanoff gives the following as doing away with the "sick-looking sepias that so many photographers produce:"

No. 1

Boiling water	128 oz.
Hypo	20 oz.
Alum	2 oz.

Boil for two minutes, allow to cool and add:

Sodium phosphate	2 oz.

No. 2

Silver nitrate	60 gr.
Water	1 oz.
Potassium bromide	180 gr.
Water	1 oz.

Pour the bromide solution into the silver solution and add, precipitate and all, to the cool hypo-alum bath. If added hot the precipitate turns black.

No. 3

Gold chloride	15 gr.
Water	2 oz.

Add to the above mixture. In this, lukewarm, the prints are immersed for about 7 minutes, then rinsed and placed in the following until they turn sepia:

Water	128 oz.
Hypo	1 lb.
Alum	4 oz.

Boil 10 minutes and when cool add:

Water	1 oz.
Silver nitrate	30 gr.
Potassium bromide	30 gr.

The prints should be printed the depth desired, as they will not bleach by this process. The warmer the tone desired the less the time the prints should be kept in the first bath, and the colder the tone desired the longer they should be kept in (*Abel's Phot. Weekly*, 1921, **28**, 767). The first bath is that recommended for Artura paper in 1911, and it was the first with sodium phosphate and gold, I believe.

A REAL CURE FOR METOL POISONING. — C. S. Livingston gives the following as a perfect remedy for this trouble:

Boric acid	2 oz.
Alum	2 oz.
Zinc sulphate	2 oz.
Carbolic acid	1 drachm

Powder and mix and add one teaspoonful to a quart of water, and heat as hot as the hands can bear. Use night and morning. This will toughen the skin as well as heal. Treat the hands with a 1.5 per cent solution of sulphuric acid before putting them into the chemicals and after; use peroxide soap. Anoint the hands very freely at intervals with Daggett & Ramsdell's cold cream and use no other. (*Abel's Phot. Weekly*, 1922, **29**, 86).

PASTE FOR CLOTH-BACKING PRINTS — R. M. Harford recommends this paste for backing prints: place 2 drachms of gum tragacanth in 16 ounces of water and leave over night. Add this to 48 ounces of water and 1 lb. of flour. Stir slowly to a paste in a double boiler working the liquid slowly into the flour to avoid lumps. Cool and add:

Nitric acid c. p.	2 drachms
Gelatine	1 drachm

Dissolve the gelatine in ½ oz. warm water and add:

Oil of cassia	1 drachm
Salol	1 drachm

Force the completed mixture through a cheese-cloth bag. To thin add water; if too thin let it thicken by evaporation. (*Abel's Phot. Weekly*, 1921, **28**, 414). Surely the use of nitric acid is somewhat dangerous, if the print is a silver image.

BLOOD-RED TONES ON BROMIDES — Deep red tones can be obtained on bromide prints by treatment with:

Cupric chloride	125 g	480 gr.
Distilled water	1000 ccm	8 oz.

Immerse until thoroughly bleached, then wash well and place in a concentrated (?) solution of sodium sulphide, again wash and transfer to the copper bath diluted with 10 parts of water (*Camera*, 1021, **25**, 542).

THE ACID FIXING BATH. — F. A. Elliott has patented a new form of acid fixing bath, in which it is claimed the acidity is retained until the fixing power of the hypo is exhausted, relying on the so-called buffer substances to maintain the acid condition. The neutral or slightly acid salts of the alkalis, including ammonia, should be used, and preferably the salt of the particular acid used, thus a citrate with citric acid and sodium acetate with acetic acid. The following are typical formulas:

Hypo	300 g	$5^1/_3$ oz.
Sodium sulphite	50 g	384 gr.
Glacial acetic acid	2.4 g	18 gr.
Sodium acetate	10.5 g	81 gr.
Water	1000 ccm	16 oz.

Or

Hypo	166 g	$2^2/_3$ oz.
Sodium sulphite	33.3 g	233 gr.
Citric acid	6.6 g	51 gr.
Sodium citrate	8.8 g	76 gr.
Water	1000 ccm	16 oz.

A hardener such as alum (6c g or 460 gr.) may be added (*U. S. Pat.* 1,411,687, 1922).

Gradation in Bromides. — E. Fancourt recommends the following developer for bromide prints, as giving the best gradation:

Metol	32 gr.
Hydrochinon	60 gr.
Sodium sulphite, cryst.	40 gr.
Sodium carbonate	80 gr.
Sodium bromide	16 gr.
Water	16 oz.

For enlargements it should be diluted with a little water. As a substitute for ammonium hyposulphite, the same writer dilutes 16 oz. of the strongest ammonia with 8 oz. of water and adds hypo until saturated, then adds 1 part of this to 4 parts of water, "to get rid of the superfluous ammonia." Then, as an alkaline fixer was not wanted, a solution of sodium sulphite was made and enough sulphuric acid added to make the solution smell of sulphurous acid, and this was added in very small quantities to the ammoniacal hypo bath. (*Bull. Phot.*, 1921, 28, 522). This certainly is a very curious waste of good ammonia. Ammonium hyposulphite would not be formed, merely a sulphite, and the solvent action of this is very poor compared to hyposulphite, notwithstanding that the writer said that he found it to work as well.

A Silver-Iron Sensitizer. — York Schwartz has patented a variation of this well-known sensitizer, in which silver phosphate and ferric oxalate are the sensitive salts. The method of preparation is as follows; 36 g of ferric oxalate are dissolved in 100 ccm distilled water by the aid of heat and the solution filtered; 4.8 g of silver nitrate and 2.8 g sodium phosphate ($Na_2HPO_4.12H_2O$) are rubbed up with 70 ccm distilled water until the silver phosphate settles out, and then 70 ccm of the ferric oxalate solution are added and stirred until the silver salt dissolves; then 3.0 g citric acid are added and the solution filtered and kept in the dark. This, it will be seen, has no colloid and if this addition is required it is advisable to reduce the quantity of water used for the phosphate, to 30 ccm, and in the remaining 40 ccm of water dissolve 4 g of gelatine, and add the sensitizer to the warm gelatine solution. The solution remains liquid above 10° C. (*Eng. Pat.* 175,317, 1920; *Brit. J. Phot.* 1922, **69**, 219). This particular modification may possibly possess some special features that lend themselves to better results than the usual one-solution sensitizer. There is an excess of silver nitrate of nearly 1 g and some nitric acid would also be formed, though this would tend to give a slower printing paper and tend also to reversal of the image. The use of silver phosphate is very old, dating back to 1839 by Fyfe, and Maxwell Lyte in 1856. The trouble with using this salt is that it gives very flat weak prints with no pure whites, and for this reason has never found favor. J. Meyer (*Eng. Pat.* 17,098, 1899) patented the use of silver phosphate dissolved in an organic acid, and Schwartz (*Eng. Pat.* 9,993,1902; 9,855, 1907) used it with potassium chlorate to obtain contrast. Valenta (*Jahrbuch*, 1901, 130; 1906, 150) proposed to use a collodion emulsion of phosphate which had the advantage of containing no free nitric acid, by using phosphoric acid and ammonionitrate of silver. This gave excellent results. Schwartz's paper was introduced commercially in England in 1908, under the name of Ensyna; but a brief exposure was given and then the image was developed with an acid metol developer. In the present case it would seem that the paper has to be developed with an alkaline oxalate, to dissolve the ferrous oxalate formed by the action of light on the ferric salt, so that it approaches more to the kallitype paper processes, than printing out.

Camphor Substitutes — J. M. Kessler has patented the addition of benzoyl derivatives of methyl, ethyl and butyl salicylates to pyroxylin solutions in lieu of camphor, which is extremely high in price and scarce. They may also be used in conjunction with the acetyl celluloses (*U. S. Pat.* 1,408,075, 1922; *Chem. Age*, 1922, **30**, 111). The number of camphor substitutes is legion; benzyl acetyl salicylates were patented by Soc. Chim. des Usines du Rhone (*Eng. Pat.* 14,699, 1902; 17,985, 1911; *Fr. Pat.* 483,-662, 1917), and by Wolffenstein (*Eng. Pat.* 27,562, 1911).

Mordanted Color Images — W. V. D. Kelley has patented a new method of obtaining colored images for subtractive color photography. After development and fixing in the usual way the positive is treated with a 10 per cent solution of formaldehyde, washed and immersed in the following bath:

Potassium bichromate	4.75 g	36.5 gr.
Potassium bromide	9.5 g	73 gr.
Cupric sulphate	14 g	107.5 gr.
Hydrochloric acid	10 ccm	77 minims
Water	1000 ccm	16 oz.

The image is bleached in this and then should be fixed, preferably in a hypo bath with metabisulphite. It is then immersed in a dye bath of about 0.5 per cent at a temperature of 43° to 54° C. (110° to 130°F. for about two minutes, then washed for about three minutes at 49° C. (120° F). The dyes are of the acid class, such as fast reds, blues and greens, acid fuchsin and the azo colors. An 0.5 per cent solution of sulphurous acid may be used to brighten the colors. The patentee considers that there is deposited a transparent salt of copper or of chromium, in proportion to the silver, since the image has a brown color possibly due to the silver oxide, which entirely disappears in the fixing bath, while the transparent copper compound is not affected; it is characteristic of the images thus bleached that they do not develop (*U. S. Pat.* 1,411,968). This should be a useful process, as it opens the field to the use of the acid dyes, and others of like type, which give one a far greater choice of colors than the basic dyes, which have been principally used. The acid dyes have the advantage, that they are as a rule less dichroic, that is to say they show the same hue in thin layers as in thick. What the exact chemical reactions are that take place can not be stated without some experimenting. In the first place there would be formed in the solution cupric bromide and chloride, and as there is excess of hydrochloric acid probably some chlorochromite of potash, which may be the active mordant, and this assumption is supported by the fact that the bleached and fixed image is not developable, for the silver chlorochromite formed can not be redeveloped.

A Universal Developer — E. H. Booth has worked out a developer that shall fulfill the following requirements: (a) it must not stain the emulsion, nor the fingers; (b) it must not cause chemical fog; (c) it must be easy to control, so that increase or decrease of contrast may be readily obtained, (d) it must be easy to make and capable of being stored in highly concentrated form; (e) it must keep well; (f) the time spent in making working solutions must be short; (g) it must be equally useful for plates, slides, gaslight and bromide papers; (h) it must be composed of chemicals that are not expensive and are readily obtainable. These are the chief requirements, but there are others, such as freedom from frilling, etc. The following was worked out:

Metol	5.7 g	88 gr.
Hydrochinon	22.6 g	349 gr.
Distilled water	415 ccm	14.6 oz.

Heat the water to 50° C (112° F) and dissolve the metol and hydrochinon. Add:

Sodium sulphite, dry	77.7 g	1,119 gr.

Stir for 2 minutes. This will produce a greyish-white precipitate. Add.

Caustic soda, pure stick	14.5 g	224 gr.

Stir until the soda is dissolved. The white precipitate will then have disappeared. Filter rapidly and bottle. If it is intended to make the developer to last over three months, small bottles should be used to hold it. The Watkins factors for negative work are: for soft pictures 13, for normal 15, for contrasty 18. The best temperature is 16° to 21° C. (60° to 70° F.). A hardening bath should always be used if possible, but if this is not permissible then the temperature should not be over 21° C. (70° F.). The hardening bath used is a saturated solution of potash alum, but the ordinary acid fixing bath may be used. The following are the working strengths for plates and films: standard solution 1 part, distilled water 15 parts. Normal time of development 4 minutes. For stand development: standard 1 part, water 31 parts. Normal time of development 8 minutes. For bromides: standard solution 1 part, water 15 parts. For lantern slides: standard, 1 part, water 15 parts. For development (gaslight) papers: standard 1 part, water 15 parts, to which add 1 drop of 10 per cent bromide solution for soft effects and 3 drops for black and white work. The worker should test the developer for the particular plate used. For slow tank work, that is 15 minutes, 1 part of the standard should be diluted with 63 parts water and used at 18° C. (65° F.). For extreme contrast in scientific work, development is pushed until chemical fog begins, so as to get as great a range of density as possible. For line work development is pushed even more and a strong Farmer's reducer applied. For cases of known over-exposure for negatives, add 5 drops of 10 per cent bromide solution. (*Austral. Photo-Review.*)

BARIUM CHLORIDE AS A HYPO-ELIMINATOR. — Mr. Byron is reported to have recommended a 5 per cent solution of barium chloride as a hypo-eliminator, and to have stated that sodium chloride and barium sulphate are formed, two salts that are perfectly harmless. The prints are to be washed for one or two minutes and then immersed for another three minutes in the barium solution, then rinsed, wiped with a wet swab and dried. (*Phot. Ind.*, 1922, 176 from *Camera Craft.*) It has not been possible to identify the actual page and issue where this is said to appear; but all workers should be warned against the use of barium chloride for this purpose. Sodium chloride would certainly be formed and also some sulphate, but this latter would arise from the sulphates usually present in ordinary water. Any traces of hyposulphite would most certainly form barium hyposulphite, an almost insoluble salt. Its solubility in water at 17.5° C. (63° F.) is 0.2675 parts in 100. From this it is obvious that all that one does by treating prints or negatives with barium chloride is to convert the hypo into a salt that is about 2800 times less soluble. This does not take into consideration that there must always be present silver hyposulphites, and these would react with the barium chloride to form equally insoluble double salts. Barium nitrate was recommended, and proved to be useless, in 1881 and somewhere in the 90's barium chloride was also suggested in the *Brit. J. Phot.*, and I made a series of tests and analyses of the results obtained and proved it to be useless, or worse.

KEEPING FERRICYANIDE SOLUTIONS. — These, it is probably well known, are difficult to keep, and it is recommended to add to the solution twice the weight of common salt, and to keep the solutions in yellow glass bottles and in the dark. (*Phot. Ind.*, 1922, 176). One of the best things to do is to add a crystal or two of potassium bichromate to the solution and boil and immediately bottle up.

TESTING DEVELOPERS. — J. I. Crabtree, of the Kodak Research Laboratory, gives some useful hints on this subject. A standard formula is adopted, the composition of which may vary according to the ideas of the operator; but the following was adopted in this investigation:

Elon (metol)	1.25 g	18.75 gr.
Hydrochinon	3.75 g	56.25 gr.
Sodium sulphite	50 g	12.3 oz.
Sodium carbonate	25 g	375 gr.
Potassium bromide	1.5 g	20 gr.
Water	1000 ccm	32 oz.

Dissolve the sulphite in about 300 ccm (10 oz.) of water; then add the metol or hydrochinon or both, and allow to cool. Meanwhile the carbonate should be dissolved in 300 ccm of luke-warm water and allowed to cool, and the bromide added. Add the carbonate solution to the sulphite solution and add cold water to make 32 oz. or 1000 ccm. To compare developers, strip negatives are wanted and while these are usually made by exposing a plate or film to a standard light-source by means of a special rotating disk or drop shutter, there is no difficulty in making the same with any light. Take a 5 x 7 or 8 x 10 sheet of film and cut off a narrow strip, about ¾ inch wide is plenty. Place in a printing frame and make a preliminary test at a fixed distance from a light, so as to find the exposure that will just give a visible deposit when developed with the standard developer with the normal time of development. Assume this to be two seconds. Then place the whole film in the printing frame at the same distance and cover with an opaque card; shift the card so as to give 16 seconds to the first strip. Then expose new strips for 8, 4, 2 seconds and leave one strip unexposed, as this will show the amount of fog produced without exposure to light. The film will then have received a series of exposures of 32, 16, 8, 4, 2, 0 seconds. It can then be cut up into strips and used for testing the developers. The exact ratio of the exposures is unimportant, but a ratio in the powers of 2 as above is the best. An alternative plan, which saves some time, is not to cut the film, but develop immediately after exposure and use this negative for printing from, and if the same exposure is given each time equally satisfactory results are obtained and one can make any number of tests. The exposure under the negative must be such as to give a visible deposit under the densest step, and a fog or unexposed strip should always be made. The test negative will have seven steps, inclusive of the fog strip, and the lowest density will represent the shadows of a negative, while the highest density step will represent the highlights. The density of the second step, that is the first visible deposit, is a measure of the detail-giving power of a developer, while the difference between this and the highest step is the range of contrast. In the case of developers required to render a minimum of exposure, as for high speed photography, the difference in density between the fog strip and the second step should be as great as possible with enough difference between the second and the last steps to give a sufficiently contrasty print. With a developer intended for line work the fog strip should be as free from deposit as possible and the difference between the first and last steps should be as great as possible.

An ideal developer is one which will develop rapidly, give good contrasts and shadow detail without fog, and have good keeping qualities. For short exposures, the ideals differ from amateur finisher's and motion picture work. Here keeping power and comparatively rapid development are the main conditions. The "developing power" may be considered as made up of (a) the time of appearance, (b) the rate of development, (c) the power to render visible a minimum exposure. Developers differ considerably as regards the time of appearance of the image. Metol, paramidophenol and other developers cause the image to appear very rapidly, but the total time to attain a high density is prolonged. Hydrochinon, on the other hand, makes the image appear slowly and gives density fairly quickly. Density contrast must be differentiated from general density; an overexposed and underdeveloped negative will have good density in the shadows, but the highlights will not be much more dense; that is the whole negative will look dense but the density contrast will be small. The power of the developer to render visible a minimum exposure is the most important property of a developer, as contrast is of less moment in view of the large variety of printing media now available. The detail-giving power of a developer is estimated by the difference between the fog strip and the first step, and the greater this is the less the fogging power. Detail-giving power is usually lowered by the addition of bromide, which practically cuts off the same amount of density from each step. The relative effect of bromide is greater on the first step than on the last, and this is why it is advisable to omit bromide when testing developers. With some very energetic developers, an addition of bromide is advisable, because it restrains fog more than the image. Suppose that in 5 minutes without bromide the first visible step had a density of 0.4, and then fog commenced to form. In the next 5 minutes, suppose a fog density of 0.2 is formed and the total density of the first step grows only to 0.5. The effective density contrast is cut down to 0.3. If the addition of bromide cuts the density of the first step to 0.45 and that of the fog to 0.05, the density contrast or effective density of the step is 0.4, showing the advantage of adding bromide. The fog produced in development is less in the highlights than in the shadows, because in the former more bromide is set free. The absolute amount of fog depends on the quantity of developer, because, with a small volume of developer, the ratio of bromide formed is obviously greater than when a large quantity is used. To test a developer for fogging power, use a lantern plate or motion picture film, as the emulsions are very free from emulsion fog, but very susceptible to impurities in the developer. Immerse a plate or film, without exposure, as to one half in the developer for one minute and then completely immerse the film. Fog will appear on the immersed half before the second and the time for the dividing line to become visible is taken as the fogging point. The keeping power of a developer may be tested by exposing it in an open tray in a room, and developing test strips in the same daily, taking care to bring the volume of the solution to that originally started with. A standard developer should always be tested at the same time. A solution that refuses to develop after standing in an open tray for two or three days is useless for tank work. In the case of a developer with good keeping powers, the maximum density will usually drop to about one-half in three or four days. The life of a developer can only be found by developing strip after strip in a given volume of solution and noting the time of appearance of the image and the point at which change in color or a weakening of the image occurs. The color of the image is important when developing prints or motion picture film. In a negative it is of less importance. Pyro alone gives a colored image in negative work and the oxidized pyro stain is deposited with the silver and in ratio to the same, therefore such negatives have more printing contrast

Dilution of a developer is sometimes desirable to secure a certain contrast in a given time. Pyro, diluted up to three or four times, behaves normally, that is, the time of development is proportional to the dilution, and the fog value approximately equal. With metol-hydrochinon the time with dilute developer up to three times is practically proportional, but there is more tendency to fog. Temperature plays an important part and with some developers, such as hydrochinon, the action is very poor at low temperatures. The more alkaline the developer the shorter the life of an acid fixing bath, and prints or negatives may become stained. Excessive alkali tends to soften the gelatine, so that a minimum is preferable. The cost of a developer depends on the total area of sensitive surface that can be developed and a developer that costs more to make but lasts longer is cheaper, in the long run.

The following is recommended for underexposed negatives:

Sodium sulphite	60 g	2 oz.
Elon (metol)	16 g	250 gr.
Hydrochinon	16 g	250 gr.
Caustic soda	10 g	150 gr.
Potassium bromide	10 g	150 gr.
Water to	1000 ccm	32 oz.

Then add wood or denatured alcohol 50 ccm

The best contrast developer known is:

A

Sodium bisulphite	25 g	375 gr.
Hydrochinon	25 g	375 gr.
Potassium bromide	25 g	375 gr.
Water to	1000 ccm	32 oz.

B

Caustic soda	45 g	1½ oz.
Water to	1000 ccm	32 oz.

For use mix in equal parts. This is inferior in keeping power to the Eastman process developer for tank work. This latter is:

Sodium sulphite	75 g	2½ oz.
Elon	1 g	15 gr
Hydrochinon	9 g	135 gr.
Potassium carbonate	25 g	275 gr.
Potassium bromide	5 g	75 gr
Water to	1000 ccm	32 oz.

For an ultra rapid developer for recording paper, as used in many scientific instruments, when it is necessary to develop almost instantaneously, the following is recommended:

A

Sodium sulphite	15 g	225 gr.
Elon	10 g	150 gr.
Hydrochinon	10 g	150 gr.
Sodium sulphite	60 g	2 oz.
Water to	1000 ccm	32 oz.

Then add wood or denatured alcohol 50 ccm. The sulphite is added in two portions to facilitate solution of the metol.

B

Caustic soda	25 g	375 gr.
Water to	1000 ccm	32 oz.

Mix in equal volumes. (*Amer. Annual. Phot.*, 1922:)

SKETCH PORTRAITS — Namias suggests the following method of making these. Coat the glass side of the negative with a varnish made of a 5 to 10 per cent solution of gum dammar in benzol, and add enough of the oil-soluble yellow or red aniline dyes to prevent the image from printing through. Allow the varnish to dry thoroughly, in fact it is as well to heat the negative for a short time. Support the negative on a retouching desk, glass side to the operator, and with an awl or needle scrape off the varnish from the contours of the face, hair, etc., or any parts that are desired in the finished print (*Phot. Ind.*, 1922, 266). The oil-soluble dyes are usually known as Sudan dyes, and it is advisable to use a mixture of the red and yellow, as the former as a rule let through some blue light that prints.

STAINING BRASS — Though the following is not new it may be useful. In order to give polished brass a steel-gray color immerse in the following mixture:

Antimony sulphide	50 g	10 oz.
Sodium carbonate, dry	120 g	2½ oz.
Water	800 ccm	16 oz.

Boil and while still hot filter out the precipitate. This precipitate is known as Kermes mineral, or sulphurated antimony, and can be obtained commercially, thus saving this first step. Then mix:

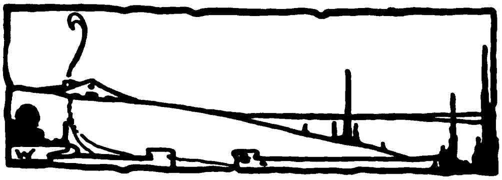
Kermes mineral	12.5 g	96 gr.
Cream of tartar	12.5 g	96 gr.
Hypo	25 g	192 gr.
Water	1000 ccm	16 oz.

The metal must be free from grease and should be dipped into the hot solution and dried. Or the following may be used:

Ferrous sulphate	83 g	637 gr.
Arsenic acid	83 g	637 gr.
Spirits of salts	1000 ccm	16 oz.

Heat to 70° to 80° C. (158° to 176° F.) until the arsenic dissolves. Spirits of salts is the impure hydrochloric acid. This solution is intensely poisonous and it is better to leave it in a warm place until the arsenic dissolves, as the arsenic is very volatile. It is better to leave it alone altogether. The brass should be repeatedly dipped into the cold solution, until the desired color is obtained, then well washed. Needless to state this attacks solder at once. (*Phot. Ind.*, 1922, 304).

ARTIFICIAL DAYLIGHT — Naumann suggests that for colorimetric work a white light, comparable to daylight, is required, and the following is his method of obtaining this by the use of the above photometer. Toluidin blue and fast red dyes are required. Two wedges must be prepared with these dyes, and the former should not exceed a density of 2.0, while the red must be flatter, 0.5 being sufficient. These wedges when dry must be calibrated, and this is done by measuring them against filters of known dye density, that is X grams per square meter. The filters should be made with densities of 0.1, 0.2 and 0.3 for the red, and for the blue the same three density filters and also two with 1.0 and 2.0 respectively. In order that the gelatine shall not run off the glass, which must be the whitest plate glass, he suggests the following clever little dodge, namely wiping the edges of the glass with a small piece of plasticine, which leaves a narrow greasy line over which the gelatine will not flow. Of course, if this is done, the actual area of the glass within this margin must be carefully measured, so as to obtain the exact area of the filter surface. The wedges, when dry, should be varnished to protect their surfaces. To calibrate the wedges, one of the filters should be placed on L^2 and the corresponding colored wedge on L^1, and the wedge shifted till the two object fields match, then the edge of the colored wedge, which should bear a paper strip, should be marked with the dye density. This operation should be repeated with all the filters, and it is clear that by superposing two or more of the filters far more readings can be obtained. Naturally this neglects the absorption of the light by the glass and the gelatine, but this can be ignored in practical work. If it be considered necessary to compensate for this, then obviously a like number of the same glasses, coated with like quantities of plain gelatine solution, can be placed over the wedges; but this is an unnecessary refinement. It is frequently difficult to judge of the matching of the fields with the finer dye densities, and this is facilitated by using filters over the eyehole; thus when calibrating the blue wedge, a medium rose Bengal filter should be used. For the red, a toluidin blue filter of from 0.5 to 0.1 may be used. When both wedges have been calibrated, one may proceed to determine the composition of a white light against any artificial source. The two wedges should be superimposed on L^1; it is better to reverse the ends of these, that is place the dense edge of one against the thin edge of the other. L^2 should be illuminated by the light to be matched, and with daylight it should preferably be reflected from white paper, such as stout blotting paper. If extreme accuracy be required, than a block of compressed magnesia, which can be obtained from any drug store, should be used, and the surface should be smoothed off with a sharp knife. The wedges are now shifted till the two fields match and the readings of the wedges will give the composition of the necessary filter to bring daylight to the artificial light and vice versa. Naumann states that he found, with a metal filament electric lamp and 6 volts overrunning, that toluidin blue 1.65 plus fast red 0.25 was required. For the old carbon filament lamp, blue 2.10 plus red 0.33 were required. It is obvious that any light may be converted into daylight in this way, and it would thus be possible to find the necessary filters to use for screen-plates with any light source. (*Zeits. wiss. Phot.*, 1922, **21**, 186). It will be found extremely easy to judge of fine differences in color by using in front of the eyehole a complementary colored filter, that is to say a yellow for the blue and a green for the red. These complementary colored filters absorb the colors and produce grey, which is very easy to read against the colored light.



LOCAL MANIPULATION

I once promised myself that I was never going to get old, but lately I have had misgivings. Of course, when I say old, I mean old in spirit, for there is not much chance to avoid having an extra year plastered onto one about every so often. That kind of age is pretty hard to sidestep.

The thing that has made me uneasy is to see myself losing certain youthful attitudes of mind.

Take for instance my attitude towards the female of the species. Formerly, when she called me by name from the other end of the house, I used to be hugely annoyed that she didn't also sing out what she wanted, and now and then I would merely bellow back, "What is it!" But I find that I have changed. I either smile indulgently and go see what is up, or else gently shut the door and make believe that I haven't heard. In other words, instead of starting a row I either go to her or make her come to me. And that's an *old* dog's trick.

But the thing that worries me most is that I have grown so easy on others. For instance, there is the man who cuts the grass. I used to cut the grass myself, so know something about the speed with which this job can be dispatched, but instead of being indignant at the way this hireling soldiers at the mower, I find myself amused at his pretense of working like a steam engine.

"Suppose you were slipping yourself," I reflect. "Would you be happy at such a job!" So the man gets his money, and I leave him his peace of mind.

I find this same weak-kneed philosophy creeping in on other things. An amateur shows me his pictures. They are punk. Once I would have told him so, and why. But now I catch myself thinking, "Why spoil his day! He has not your experience, your standards. Be easy on him." So I get him to talk about them himself, and then he forgets to ask for a judgment. Or I suggest certain other arrangements or new subjects he might try.

Why can't I jump right in, the way I used to, and set everybody right! I fear the marks of age are creeping o'er me.

Nevertheless, one idea is as strong with me as ever and that is the friendliness of picture-making as an avocation. This idea is so well brought out in a letter from one of the finer (I long ago learned it is not the weaker) sex, that I am quoting it here entire, to wit:

"When you proposed the question as to whether a camera can serve any other purpose than to give a record of picnics and parties, of houses and friends including the babies and older children, you evidently set a good many of the readers of AMERICAN PHOTOGRAPHY to thinking. At any rate, my own desk has yielded, from its forgotten recesses, the notes made long ago, when the subject first came up. They give no very new view-point, and may not be helpful, but such as they are, I am moved to send them.

"At first my answer was that my best pictures are more than records, but on further thought it developed that they are, rather, unusual records or at least unusually successful ones, often proving to have a further use, even when the only reason for taking them was the common one of 'getting a print for the album.' On the other hand there are some pictures that have been taken solely because of requests that have come, sometimes from comparative strangers. As an example of such pictures, the ones sent to a Red Cross nurse, while she was overseas, showing her father and mother in the home surroundings, come to my mind. The purpose of those was decidedly more than to get a record, and the result for myself has proven most worth while, for now that the nurse has returned, a friendship has grown up between us, which must have been much hastened in its earlier stages because she knew that at a busy time I had taken thought for her when we had scarcely met.

"My camera furthers my friendships, then, both by helping to make new acquaintances, and by helping me to keep in touch with those far away. Over and over this happens. Two college classmates, each a mother of charming children, live near enough for occasional pictures of the babies. We would have much less in common, if it were not for the contributions I can make to their baby-books. And within a short time, I have had two letters, one from a playmate from whom I was separated at the age of twelve, and the other from a cousin in Hawaii, each of the letters illustrated, as our custom is, with three or four prints. Perhaps neither of these girls would be writing me if it were not for the pictures, for we are all interested in the printing, and much of our correspondence is concerning ways and means for improving our methods.

"As a teacher, my camera has made it possible for me to do some things for the school that others could not do. A set of record pictures, showing our new building in various stages of progress, pictures of the school gardens and green-house, or the teams in basket-ball, track, and other branches of athletics, and pictures taken on the auditorium stage, after the plays given by the students, with the stage lights sufficient for making the exposures, are some of my achievements. Then, too, at times the students have learned to do their own printing, and have studied the subject of light and that of lenses, with the camera to illustrate. It is a wonderfully interesting way for a physics class to learn an application of conjugate foci by means of an ordinary daylight enlarger, which may be taken into the classroom and before the end of the recitation a finished enlargement may be developed before the class!

"Some time ago, when I had a class of nine-year-old boys in sunday school, they were surprisingly aided in regular attendance by the simple means of taking a picture of all who had been present for six weeks in succession, a small print being given to each, with the promise of another group picture at the end of the next six weeks, or a postcard enlargement of the first if one had been in both. We even presented a 5 x 7 to a few who were very faithful for a whole year.

"That Christmas presents are often provided by the camera, all who make enlargements, and some who do not, know. I have given the two girls who are corresponding and camera enthusiasts, frames like my own, which have movable backs, and will hold prints of various sizes, with cutout mats for the smaller ones. They usually receive enlargements for the frames each year.

"If it is true that doing something for somebody is the surest way to happiness, then the camera is a first-class aid to happiness. Surely I have found it so."

SKETCH-BOOK LEAVES

PROFESSIONAL ASSISTANCE

A question which has lately come in for a good deal of discussion among professional photographers is that of making more out of the relation now existing between the amateur and the professional, if it may be said that any relation at all exists between them at present. Here certainly is a fruitful subject for consideration, one in which the amateur should be even more interested than the professional himself.

If we were not so used to it, we could not help being struck by the fact that photography, so far as concerns the variety of people interested or engaged in it, is a pretty mixed-up affair. No apprenticeship is necessary to take pictures with success, although to make a living out of taking them requires not only an apprenticeship, but a fair degree of business ability and generally some capital. Everyone is conscious of a dividing line between the amateur and the professional, and yet the only satisfactory line which it has been possible to draw between the two is one of motive, it being explained that the amateur makes pictures for the enjoyment he derives from so doing, while the professional make pictures for a living. Nevertheless, although there are a good many amateurs who are as skillful and proficient as the average professional, the thing that clearly and rightly distinguishes the professional from the amateur in the public mind more than anything else is the general truth that the professional knows thoroughly what the amateur knows only in some slight degree.

In this situation, it is urged that the professional help the amateur to improve his results.

Some professionals object that if they do this they will merely lift the amateur up to their own level and thereby make themselves less necessary than at present. Why give away the advantage which is their own bread and butter?

The present writer can understand this attitude, but he does not agree with it, for the reason that it runs counter to the history of progress in all lines. Obstructionist practices inevitably fail. They are generally a rather stupid effort to protect a weak position, which cannot be improved in such a manner no matter what is done. The writer's own attitude is that the matter should be viewed without prejudice, to see if it has possibilities of profit. If the professional is doing a good business on his present basis and cannot afford to bother with the amateur, as is often the case, well and good, but otherwise he oughtn't to fill his mind with foolish thoughts about putting himself out of business by helping amateurs to make better pictures.

The trouble with a great many people is that they can see opportunity only if clad in familiar garb. They can gauge the opportunities in medicine, law, dentistry, and other professions, because it has all been worked out nicely for them by the experience of others. A grocery salesman can make so much, a haberdashery salesman can make so much, an automobile mechanic makes so much, the average chemist's income is so much, and so on. To be this or that or the other thing you do thus and so, and you make so much money. The rules have been all worked out. Follow them and you will succeed.

To my mind, this is deathly, also un-American. It puts everything on a sort of occupational caste system. You don't find the newcomers to our shores settling down to any such play-safe program, and that is one reason why so much of the nation's wealth has passed into their hands. Nor is it the system on which have been built the substantial fortunes which are pointed out. How could it be? When one puts himself in the play-safe class, following closely in the footsteps of others, he puts himself in competition with the crowd, and that is sure to limit his returns.

It seems pretty clear that there is a new opportunity for the professional photographer today if he wants to specialize in service to the amateur. Certainly the need of such service exists, and those who supply it should be able to profit thereby in exact proportion to their own resourcefulness and energy.

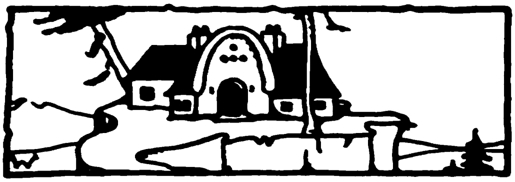
One reason why there is a commercial opportunity in such service is that the average quality of amateur finishing is exceedingly low, so low that amateurs who have been in the habit of doing their own work complain that it is almost impossible to get as good work done for them by others, regardless of the price. If the films are taken to a professional photographer instead of to an out-and-out finisher, little improvement is noted, not because the professional is incompetent but because he lacks respect for the job, using left-over developer on the negatives and making the prints on any kind of paper which he happens to have in the place. How the professional expects to maintain a reputation by any such methods is a mystery. At any rate, it is clear that with the present low grade of amateur finishing, there is an opportunity in every locality for some professional to build a reputation on expert work of this kind, charged for on a basis of quality instead of attempting to meet the rates of some cheap-skate who ought to be shot at sunrise.

Further, present conditions are such that the average amateur of today needs more help than did we who learned to make pictures a decade or two ago. This is because he is busier, or thinks he is busier, than we were in our spare leisure hours, and therefore will not give the time that we have given to developing and printing, thus shutting himself off from learning many things which we learned as a matter of course. What we gradually discovered in regard to lighting, exposure, composition, trimming, and a host of other technical details, simply because we dug into photography a good deal deeper, he must be shown by someone who knows the rest of the game; and who is better situated to do this than the professional photographer in his town or neighborhood? Far from lifting him to a position of rivalry, such assistance cannot do otherwise than to give the amateur a greater regard for the professional and a greater dependence upon him; at the same time, by the encouragement gained, giving the professional more business from this new source.

It should not make much difference to a photographic expert whether he makes his money from a more or less stereotyped style of studio portraiture at so much a dozen or from proving himself resourceful in performing photographic service of a more varied character which the public is unquestionably in need of. The main thing is to get in the money.

From what has been said the reader may assume that most photographers are unwilling to help the amateur, but this is not really true. The situation is rather that most photographers have neglected the amateur, not imagining that they had anything to gain by reaching out for his favor. As a matter of fact, there are few professional photographers who are not glad to help the amateur when he comes to him with his questions, and to perform various special services for him if asked to do so, such, for example, as making enlargements and serving up the amateur's favorite prints in special mountings.

The writer owes much to the fact that he early formed the habit of scraping acquaintance with professional photographers whenever he found the opportunity to do so, and it has often seemed to him that the amateur who is starting out today cannot do better than to seek the assistance of the professional in his neighborhood in his efforts to improve. He also feels that the professional can learn a great deal from the amateur, for while the professional is by necessity restricted in the scope of his activities with the camera the amateur makes pictures everywhere and is also a pretty fair reflection of the public attitude in regard to photography. The professional needs some means of keeping in touch with the public attitude, for, working in a corner as he does, there is always a danger of his growing out-of-date.



THE QUESTION BOX

WINNING ANSWER TO JULY QUESTION

Wherein is a curtain or focal-plane shutter more efficient than a between-the-lens shutter?

The efficiency of a focal-plane shutter as compared with the between-the-lens type is analogous to the efficiency of a fast lens as compared to a slow lens. With a curtain shutter we obtain more light in the same amount of time.

To explain this for the average reader I believe it will be best to assume that he is not acquainted with the principles involved. In this way it will be easier to proceed to the vital point

The curtain and focal-plane shutter is self-describing. It is a form of curtain and it moves in the focal plane, or at least near enough to it to give it the name This curtain, a thin, strong, opaque cloth affair is wound on a spring roller quite similar to that used on a window shade and is drawn rapidly past the face of the plate or film. Across this curtain at different intervals horizontal slits are cut, varying in width from 1-8 to 1½ inches. There is also one opening the full size of the plate to provide for time exposure By mechanical arrangement, any one of several slits may be drawn past the face of the plate, and the speed of its motion is predetermined by the tension put on the spring in the roller. From this brief description it can be seen that exposure will vary according to the size of the slit used and the speed at which it travels past the sensitive emulsion. With four slits and six tensions we secure (in one make of camera) 24 different speeds, varying from 1-10 to 1-1000 of a second. So much for the curtain shutter.

The other type — between the lens — is familiar to most camerists. It consists of two or more very thin blades or leaves of metal which are opened and closed by a spring mechanism actuated by the well-known 'bulb' or, in later models, by a flexible steel cable. These blades are so shaped that on opening they admit light gradually from a small central point to the full opening of the diaphragm. On closing, the effect is reversed.

Now let us make an exposure with each shutter and compare the operations. Suppose we set each for 1-25 of a second at f:8. What does this mean? It means that every point on the plate should receive light for an interval of 1-25 of a second and this is essentially what happens. But with the former type the plate is exposed in successive horizontal elements from top to bottom at full intensity, while the latter the plate receives a gradual exposure over its whole surface from the very weakest to full intensity and back again. We have exposed both plates for the same length of time but it can be shown that the *amount of light* is about 1-3 greater with the focal-plane shutter. We have not space here, however, to go into the mathematics of light necessary to prove this fact. Suffice it to say that this advantage is the main factor in the curtain shutter's efficiency. Another point is the accuracy of timing which we can obtain with this type and the lack of fine delicate parts to get out of adjustment. Between-the-lens shutters are very sensitive to foreign particles; they are usually slower in speed than their markings indicate, and it is known that their operation is affected according as the camera is held in the vertical or horizontal position. (True of pump shutter only. — Ed.) Another advantage of the curtain shutter is that it admits of the use of a mirror for direct view finding.

One may ask why we use different-sized slits, why not one slit and more tensions or vice versa? A few figures may help to show that the combination of several openings and several tensions serves to satisfy an economic requisite. Take for instance the smallest slit — 1-8 of an inch — and assume that we wish to make an exposure of 1-1000 of a second With a 4¼ inch plate we can find the time required by the curtain to make the exposure by dividing the number of eighths in 4¼ by 1000, or approximately 1-30 of a second. But assuming only this one size opening we find that to make an exposure of 1-10 of a second our curtain would require 3 seconds to make the passage, which would be mechanically difficult to obtain accurately and prohibitive except on a tripod. Going to the other extreme, to make a 1-1000 of a second exposure with a 1½ inch slit would require our curtain moving at the rate of 1000 feet per second With one medium-sized opening we would still be obliged to have 24 different tensions and this would involve an elaborate mechanism as well as extra work on the part of the photographer.

On the other hand one tension and 24 openings would necessitate a curtain over ten feet long. So to sum up matters we must have our curtain cover the plate quickly enough to enable us to hold the camera and yet not with a speed sufficient to set fire to the film. Four different openings and six tensions answers the requirements quite satisfactorily.

In conclusion, the focal-plane shutter is more efficient than the between-the-lens type because, with identical lens and stop, it allows more light to pass in a given amount of time. This fact makes possible high-speed action pictures and also well-timed snapshots under light conditions that would be inadequate for the other type. Hence, in newspaper photography where *time* is a most important factor, the focal-plane shutter is used almost exclusively; cost is a secondary consideration. In fact, the high price of the focal-plane shutter is a good proof of its higher efficiency. It will be found in almost every kind of machine that as its efficiency progresses in arithmetical ratio its cost will mount up in geometric ratio. — George A. Beane, Jr.

Practically speaking, a focal-plane shutter does anything which can be done with or by a between-the-lens shutter. Then add to that the fact that it is a part of the camera and not the lens and you have an advantage quite important. Change to any lens and you can still use your curtain shutter, be the lens old or modern, and it need have no shutter to serve its purpose. I have even used a lens which once had old Waterhouse stops. — E. F. Jones.

OCTOBER QUESTION FOR READERS

What would you give as the four most important rules for success with indoor pictures? Explain your selection.

For the best answer to this question received by November 15 a credit of $2.00 towards books of our publication will be awarded. Address the Question Box Editor, and please write any other communication on a separate sheet of paper.

READERS' CRITICISMS

BEST CRITICISM OF PRINT NO. 31

Had Euclid been an art critic, he would never have uttered that monumental falsehood: "A whole is greater than any of its parts." Here we have his statement refuted so far as pictorial composition is concerned, for any of the five component parts, isolated and enlarged, would be more artistic as a portrait than the whole is as a group. Yet even at that, the group is as good as these turned out by many professional photographers.

Laying over each of the heads in the picture a sheet of paper in which has been cut a hole 5-8" by 7-8" one sees a miniature portrait, well lighted, and evidently expressive of the character of the sitter. In each case, the included portion of the background is objectionable because of the attention it must receive. In a cursory view of a picture, one should be unconscious of the background. If a pencil were used here on the negative, it might have the effect of oil on the troubled waters.

Now the only objection to this type of group is that people do not gather in bunches and sit there doing nothing and obviously saying nothing, and in all probability, thinking very little. Or rather they do it only when in front of the camera. Hence there is bound to be an element of unnaturalness.

May I hazard the opinion that a less uniform disposition of the sitters' hands would lend pleasing variety to the arrangement; and that the amputation of the feet of one of the sitters, and the toes of another, might have been avoided by dropping the lens a trifle!

I suspect that this group was made on the porch of the childhood home of the ladies. To them, to the maker, and to other relatives and friends, then, it has an integral relation to the theme. To the casual observer, not so; he finds the mass of clapboards and shutters on one side, the recessional of pillars on the other, and most of all the nondescript horizontal black line against the inconsequential white rectangle in the middle background, together with the other white rectangle in the upper right-hand corner, rather confusing. His eye, like Emerson's snow, "seems nowhere to alight."

Yet I fail to see in this picture, any reason for "going the limit." I suppose we all make prints of this kind. We know they are not art; when we get into a discussion with someone whose opinion we cherish, we are very careful not to call them pictures; but we continue to make them — at least I do; and with all due deference to pictorialism, I'm going to continue. Why! Simply for this reason: I have some friends whom the Lord gifted with the best hearts he ever planted in human bosoms. But they don't care a whoop about art. When I show them a print with lines and masses worked out to the best of my poor ability, they are polite and look at it, but pick up some snapshots of execrability inexpressible and go nutty over them. These friends of mine like to be taken. But I — assuming for the nonce that I had the artistic ability — could try till doomsday and not get them to pose for an artistic figure study or group. Well, I'm going to keep on taking this kind of picture because they like them. Says J. G. Holland, "Wings are for angels, but feet for men." I like to essay artistic subjects, but in this man's town I'd be lonely, so lonely. And I like company — and variety. — Bert Leach, Portsmouth, Ohio.

OTHER CRITICISMS

Starting at the left:

Figure 1 looks comfortable and not self-conscious.

Figure 2 watching the manipulation of camera and so not interested in the group.

Figure 3 gazing far off from the matter in hand and not comfortably seated (apparently) and surely not "tied into" the group.

Figure 4 also watching the camerist from the corner of her eye.

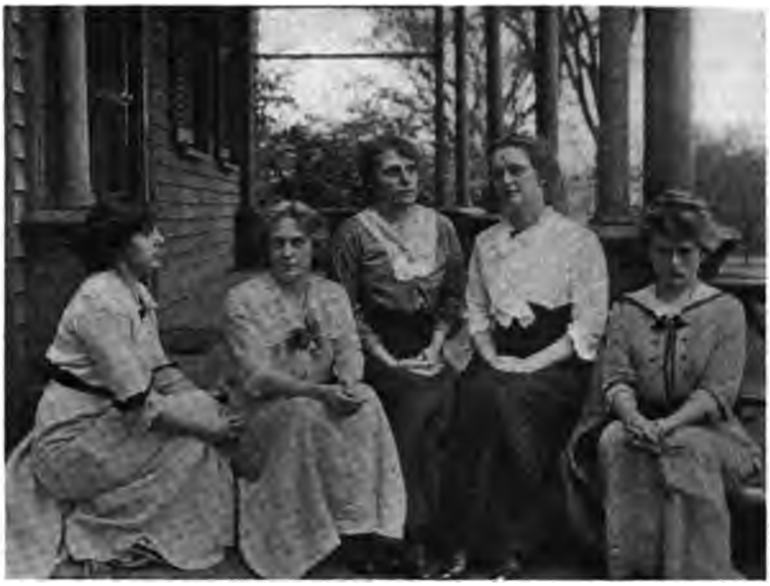
Figure 5, head tipped too low and eyes glancing up from under the lids. Hands and arms in bad position.

A little re-arrangement of the group — interest in each other not in the picture, should result in a most pleasing picture with such good material at hand.

Here is my idea:

Figure 1 "as is."

Figure 2 above and slightly back and much closer to figure 1.



Criticism Print No. 31

Figure 3 with body turned sideways and facing three-fourths front.

Figure 4 one step down and in front — perhaps an arm resting on Figure 3's lap — but kept in focus.

Figure 5 with body turned away from camera — possible profile — hands possibly occupied with plate of candy, as they seem in the way.

Any way to "tie in" the grouping. — E. F. JONES.

In looking at the data accompanying this picture we find two things worth noting. One is the cheerful optimism of the maker in submitting for criticism a picture of a whole group of people, even though he qualifies it somewhat by saying that they are his sisters anyway. The other point is that the exposure was made on a dull day. By turning to the picture we may see at once that it is much better than it would have been had the sun been shining brightly. The sitters appear to be quite at ease and there are no harsh shadows.

The most serious defect appears to be the lack of unity caused by the diverse attitudes of the subjects. By seating them in chairs on the lawn there would have been much more opportunity for choosing the viewpoint and more satisfactory grouping. We would preferably place the two ladies with white waists near together. At the same time we would try to avoid having so many heads near the skyline. A little more care in regard to posts, etc., growing out of heads would be in order also.

On the whole we would regard the picture as being fairly satisfactory. A little more naturalness and a little less "assembly" and it would be very good.— RALPH BEEBE.

In my estimation an outside picture should as far as possible convey the effect that the subjects are in no way whatever posing for the picture. Now in this picture you have them all looking in practically some different direction, which is not generally the case in a group of women sitting out on the porch together.

A thing I think would have helped your picture wonderfully would have been to have them doing something, or at least have something in their hands. As it is, too many of them just seem to have their hands folded up. Although the reproduction is exceptionally bad in my paper, I think I shall have to give you credit for having good lighting on all your subjects in the group.

The lady on the extreme right of the picture seems to have her head down too low and seems too intently looking at the camera or the man taking the picture. — A. L. ELLIS.

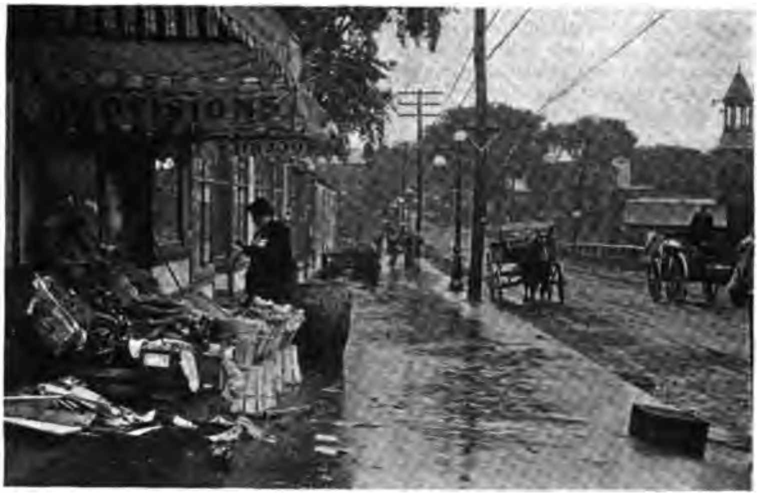
Facing a camera lens seems to be a terrible orde for most humans. Apparently the subject imagine that a great effort of some sort is necessary and in hi endeavor to comply with this terrifying, thoug imaginary, requisite he succeeds in registering an expression which otherwise he never exhibits. The female of the species is not exempt, as the print i this month shows, but I use the masculine pronou to avoid grammatical difficulties.

It might prove interesting to consult a psychologis on this matter and learn just why the camera's ey causes the (sometimes ludicrous) facial expressio it so often does. Each one of these ladies knew th picture was going to be taken and each in tur endeavored to look natural, but I doubt if any one them is satisfied with the result. Why!

There is also evidence that the photographer pos- them so as to obtain the profile, half and full fa portrait. This is commendable on his part, and w successful too. But how much more pleasing if he h made a genre out of the group. He could have h the women sewing or conversing — anything, ju so they were not so manifestly conscious of th camera.

Regarding less important details, the grou crowded by the side and lower borders; and t porch pillars, yielding a series of diminishing p pendiculars, are anything but pleasant.

The data state that the picture was made o



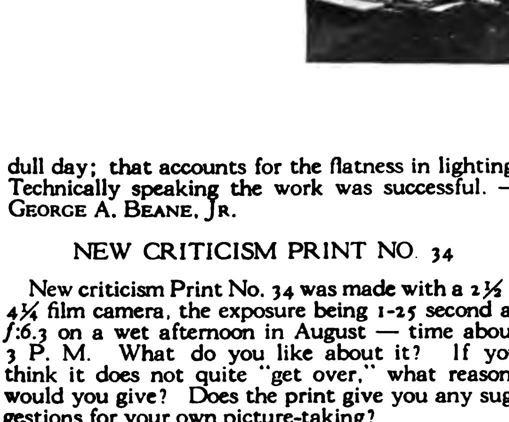
New Criticism Print No. 34

dull day; that accounts for the flatness in lighting. Technically speaking the work was successful. — George A. Beane, Jr.

NEW CRITICISM PRINT NO. 34

New criticism Print No. 34 was made with a 2½ x 4¼ film camera, the exposure being 1-25 second at *f*:6.3 on a wet afternoon in August — time about 3 P. M. What do you like about it? If you think it does not quite "get over," what reasons would you give? Does the print give you any suggestions for your own picture-taking?

For the best criticism of this print received by November 15, a credit of $2.00 towards books of our publication will be awarded. Please write on one side of the paper only, and address the Readers' Criticism Editor.



OUR COMPETITIONS

LITERARY COMPETITION

It has been our annual custom to hold a literary competition, and as this has brought us in the past a number of practical articles, we are repeating our offer this year. For the best article on a photographic subject, whether technical or inspirational, submitted to us before November 15th, we offer a prize of $35.00. We will purchase any other articles submitted which we can use, and we have usually bought about half the articles sent in. The manuscripts must be typewritten, illustrations should be kept to the minimum and diagrams should be drawn in ink neatly enough to be reproduced.

OUR ANNUAL COMPETITION

We publish in the advertising pages of the current issue formal notice of the conditions of our Third Annual Competition in which as usual cash prizes amounting to three hundred dollars and honorable mentions of lesser value are to be awarded. We hope that our readers will be liberal in the selection of their best prints for entry in this competition, for we expect to continue the practice of the past two years and send the prize-winning prints and a substantial number of the honorable mention prints on a tour of camera clubs throughout the United States We feel, and have had our opinion confirmed by competent critics, that the standard of the collections exhibited as a result of this competition in the last two years has been very high and that these exhibitions have given pictorialists and lovers of art in many places throughout the United States the opportunity to see a really representative collection of modern photography which, if it did not attain the standard of one of the international salons, still included enough work of salon standard and by salon exhibitors to show pictorialists what is regarded by judges and juries as high class modern photographic work.

We would like to reproduce here a few of the great number of enthusiastic letters which have been sent us by those who have seen these shows, telling what has been their effect on their community and the enthusiasm which has been aroused by them. It seems to us that the help which has been given pictorialists in the smaller towns by seeing these pictures has been sufficiently great to justify us in asking salon exhibitors to send us prints of salon quality for inclusion in the next competition and exhibition.

The 1922 prints were, or will be before December first, exhibited in the following places: New York City; State College, Pa.; Wilkes-Barre, Pa.; Worcester, Mass.; Boston, Mass.; Portland, Me.; Oakland, Cal.; San Diego, Cal.; San Francisco, Cal.; and Sacramento, Cal. Thus it will be seen that photographers from coast to coast have seen these pictures and we hope to arrange a similar schedule next

in rytol and enlarged on Wellington Bromide Cream Crayon.

The second prize was awarded to Mr. J. Sitek for his print entitled "Le Remouleur en Panne." Here is an interesting snapshot made doubly interesting by its attractive architectural background. There is a subtle humor in the title, for the technical term *en panne* is that which is regularly applied to an automobile which has got in such difficulties that its operator has to roll up his sleeves and get to work. The application to the knife-grinder's rolling machine is a descent from the sublime to the ridiculous. This was made in Lyons, France, with a 6½ x 9 cm Reflex camera fitting with a 135 mm Zeiss Tessar lens. The exposure at 11 A. M. in June in bright light was 1-12 second at *f*:4.5. The color ortho plate was developed in pyro and an enlarged negative made on an 18 x 24 cm rapid plate from which the print was made on Gum bichromate Noir vieille gravure.

Honorable mentions were awarded as follows:

A Sun Baby	Jas. H. Grime
Recess	C. J. Milne, 3rd
Awaiting the Master's Hand	C. W. Pratt
Illumination	C. B. Rosher
August Landscape	Edwards H. Smith
Sunshine & Shadow	Sterling Smith, Jr.
I'll Help Myself	E. S. Van Sickle

Commendations were awarded as follows:

Trixie Girl	M. P. Andrews
The Fresh West Wind	Stuart G. Baits
Into the Clouds	Wm. E. Barr
Bathing	Anton Berest
Old Indian Trail	H. J. Brennan
Pasture Pond	Miles J. Breuer
The Baby	Elmer Bridges
Childhood Happy Hours	E. J. Browne
At Rest	Marjorie Brown
Peek, Your Majesty, the Sea	Howard C. Cloyes
A Posy for the Postman	Ralph E. Cole
Beside the Spreading Chestnut	Earle H. Cooper
Learning to Pose	Ross Cowan
Sky Way	O. G. Danewit
A June Day Vista	Victor E. Darnell
A Haunt of My Youth	Chester Demaree
Falls of a Mountain Stream	Miss Alma De Vore
Mounts Madison and Adams	Herbert L. Douglas
In the Wisconsin Dells	L. O. Field
Portal to a Sylvan Dell	Alvin L. Fischer
The Clam Digger	Hollis M. French
My Cousin	E. P. Gavilan
Home	Edw. L. Gilroy
Juvenility	Davis Hammerli
Dinner Time	F. J. Harris
Turbulent Waters	Willard H. Harting
The Sleet Storm	Ralph S. Hayes
Threatening Sky	I. Higo
Waiting for the Chimes	Ellen C. Hildebrand
Looking Into the Future	Mrs. Alice K. Hinkley
Woodcliff Lake	Henry M. Hyman
The Path Through the Pines	Mrs. C. H. Johnston
Playing with Sand	W. Keibel
The Road from Plainville	Jas. B. Kent
The Flume	W. W. Kuntz
Venus	Henry Lam
Reflection	Th. L. Lim
The River	James S. Loomis
A Little 20th Century Flapper	Howard F. Louis
The Torrey Pine	Franklin G. McIntosh
The Old Homestead	H. J. Mahlenbrock
Through the Columns	Philip Mehler
Sunny Day	H. E. Morehouse
Along the Waterfront	Geo. F. Munson
Sweet Idleness	Jennie H. Oliver
A Morning Sentinel	Vernon Peakes
The Walnut Hills Cabin	Harvey C. Pendery
Canning Season	Margaret Peters
A Setting Sun	W. H. Pote
Feather River	F. E. Pugh
Daisies	C. L. Richardson
Nature's Peacefulness	F. H. Robinson
Mother	Frank L. Roya
Along the Charles	Howard K. Rowe
Cutting Potatoes	A. H. Scott
The Old House by the Road	Mason H. Seabury
Shady Road	L. A. Shaver
Portrait of a Lady	Ivan Sokoloff
A Study in Headgear	Ernest Steiner
Springtime in the Woods	Frank Streith
Willow Pond	W. L. Thompson
Morning Calm	A. M. Tomlinson
A Home Portrait	K. Tsubone
Home Again	J. W. Varian
Begging	W. R. Walton, Jr.
In the Doorway	R. H. Watson
The Orphan	Mrs. M. N. Wilcox
Landscape	John B. Ziemanski

ROLL OF HONOR

FIRST PRIZE

J. H. Field 9
George W. French 5

SECOND PRIZE

H. B. Rudolph 7
Kenneth D. Smith 7
Alexander Murray 6
Lyle A. Morse 5

THIRD PRIZE

J. Herbert Saunders 8
W. R. Bradford 6
Jarded Gardner 6
Wm. J. Wilson 6
Mrs. Sterling Smith 5

HONORABLE MENTION, SENIOR CLASS

W. Kitchen 12
Sotaro Saba 12
Louis A. Dyar 11
Herbert J. Harper 10
Fred E. Crum 9
Juventino Ocampo 9
Walter Rutherford 9
Edwin B. Collins 8
Lawrence Baker 7
F. A. Northrup 6
Louis R. Murray 6
Walter L. Bogert 5
Warren R. Laity 5
James Thomson 5
Elizabeth B. Wotkyns 5

COMMENDATION, SENIOR CLASS

Dr. E. L. C. McGinnus 17
J. A. Singler 17
Gus Schinkel 16
Carlos F. DeMoya 14
E. E. Jones 14
Arthur Palme 14
Julien J. Proskauer 14
F. E. Bronson 13
B. M. Whitlock 13
C. M. Harris 12
J. K. Hodges 12
Frank R. Nivison 11
A. C. G. Allison 10
Leo Kraft 10
Geo. Miller, Jr. 9
Jiro Ito 8
W. H. Finch 7
Paul E. Guillot 7
Gregory L. Oliver 7
Roy H. Heiser 6
Wm. B. Imlach 6
M. L. Shattuck 6
Chas. T. Graves 5
C. A. Heald 5
H. E. Horrigan 5
Frank H. Luwen 5
Herbert C. McKay 5
James J. Ryan 5

HONORABLE MENTION, JUNIOR CLASS

J. W. Jeffers 6
Edwards H. Smith 6
Robert E. DeLand 5
Garnet E. Jacques 5
P. F. Squier 5

COMMENDATION, JUNIOR CLASS

John Ziemanski 28
W. Keibel 25
F. H. Chant 23
Nat S. Smith 19
Howard E. Louis 18
Harvey C. Pendery 18
G. A. Smith 9
Ralph Beebe 8
Thomas C. Higgins 8
Mrs. C. H. Johnston 8
Hannah G. Myrick, M. D. 8
E. J. Williams 8

Wm. E. Barr 17
H. J. Brennan 17
Edw. L. Gilroy 17
Paul Richardson 17
W. W. Kuntz 15
Howard K. Rowe 15
L. Archambault 14
H. J. Mahlenbrock 13
Miles J. Breuer 12
J. R. Frow 12
Willard H. Harting 12
C. V. Hewitt 12
A. S. Workman 12
Walter P. Bruning 11
Simon Jochamowitz 11
Ivan Sokoloff 11
Herbert L. Douglas 10
Fred Goodin 10
M. W. Osterweis 10
John H. D. Blanke 9
Chester Demaree 9
A. T. Flikke 9
Stephen J. Palickar 9
E. J. Browne 7
Geo. L. Heath 7
John Janson 7
Dr. C. W. Pratt 7
J. L. Clyburn 6
Mrs. Ellen C. Hildebrand 6
Jas. S. Loomis 6
Arthur W. Moreau 6
A. M. Tomlinson 6
R. D. Wilson 6
Harold B. Winslow 6
Arthur S. Yoshida 6
Ralph B. Bonwit 5
H. H. Van Kennen 5
Franklin Chapman 5
Theo. M. Fisher 5
Ralph S. Hayes 5
Franklin G. McIntosh 5
Philip Mehler 5
James Owen 5
Hugh Palmer 5
W. H. Pote 5
C. B. Rosher 5
Ford E. Samuel 9

OUR ILLUSTRATIONS

The print entitled "A Photographic Book Plate" by Howard Rembrandt Van Ryn, who is a lineal descendant of the great painter Rembrandt Van Ryn, was made at the White School of Photography. It was the inspiration of a moment. The lettering was hastily chalked on a bit of wrapping paper with a marking crayon and the model, a fellow student in working clothes, posed rapidly but effectively. The result is the best photographic book plate which we have ever seen. It is highly decorative and not too obtrusive in suggestiveness. It also gets away from the rather hackneyed motive of the nude which seems to be the subject of a large number of all the photographic book plates which have been made. No data are available. Page 615.

Yvonne Park is the wife of the well-known British photographer, Bertram Park, whose work is familiar to all who have followed "Photograms of the Year," and is herself a photographer of no mean skill. Of recent years, she has produced a large number of most attractive studies of the nude in poses which are much out of the ordinary, and "Pandora," reproduced on page 617, is an interesting example. The pose seems at first sight a little strange but it fits the requirements of the title very well and is also well planned to minimize the deficiencies of the model. The attractiveness of the original print is largely in the subtle gradations of the flesh tones as well as in the suggestion of grief. No data.

"Becky," by Charles Henry Davis of New York, is an interesting example of typical high grade American studio work. While high in key, it is well modeled, brings out the characteristics of the subject well and furnishes a graceful and pleasing likeness. No data. Page 619.

"In a Land of Romance" by John M. Whitehead shows a type of scenery which we are not accustomed to associate with Scotland. The Lombardy poplar is more characteristically a tree of a somewhat warmer clime, but the introduction of these tall straight trees forms a pleasing vertical note well opposed to the horizontal line of the flat landscape and the stratification of the clouds. To the clouds, indeed, the beauty of the picture is due, for this landscape would be uninteresting without a strongly featured sky. The print is a composite made from three negatives enlarged onto 10 x 12 Imperial plate and printed on Vitegas gaslight paper. Page 621.

"Morning Light" by Ernest M. Pratt shows how a commonplace grouping of trees in urban surroundings may be turned into a mysterious and beautiful picture by selecting the proper light and atmospheric conditions. The grouping of the trees is conventional but the strong light into which the camera was pointed and the obliteration of existing details by the present mist have added accents and mystery which produce a most interesting composition. No data. Page 623.

"Sisters" by Salome E. Marckwardt, one of a number of prints awarded third prizes in the Senior Competition for November 1921, was printed on grainy stock and in such a color that the engraver has failed to give us an adequate reproduction of the charm of the original gum print. The subject is attractive and the original has a beauty of texture and value which does not appear in the production. Page 627.

Two other prize winning pictures in this same competition are reproduced on page 628 and 629. "Winter Sunshine" by Alexander Murray and "In Old Whitby" by J. Herbert Saunders. By some unfortunate accident the data for these prints are not at present available, but the prints themselves will undoubtedly impress our readers as interesting treatments of roads. The composition is similar and in each figures are introduced to add a human touch.

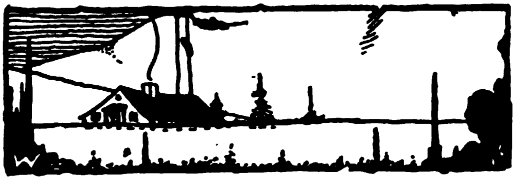
Mr. Soichi Sunami does not seem to have added anything to the meaning of his picture "Song of Spring " by the title. It is a charming figure study but this is all and this is enough. The picture was worth taking for its own sake, but the invention of a title has not conferred upon it any added dignity or merit. This was made in Seattle, Washington, with a 5 x 7 Studio camera fitted with a 12-inch Heliar lens. The exposure at 3 P. M. in May in soft studio light was a short time exposure at *f*:4.5. The Eastman portrait film was developed in pyro and printed on Artura carbon black E rough. Page 645.

"Master Jack" by W. A. MacQuown is one of those child portraits which tells its story at a glance and which is almost impossible to criticize. The artist has got his model interested and has made his exposure at the right moment. The result is a picture which pleases all who see it. Made with an 8 x 10 view camera, fitted with a 12 inch Goerz Dogmar. The exposure at 11 A. M. in December at a north window was about ½ second *f*:5.4. The Seed 30 plate was developed in pyro and printed on Iris E rough. Page 647.

"Cheat River — West Virginia" by Charles K. Archer is one of those landscapes which seem made to order for the purpose of the painter. One does not find them every day, but when stumbled upon they compose themselves, provided the light is right. Here is scenery on the grand scale — a noble river, grand rocks and forests trees, and a background of mysteriously receding hills. The picture was seen by the receptive eye and adequately recorded. Page 648.

"The Pool in the Patio" by R. C. Lewis is a sophisticated rendering of commonplace material in a distinguished composition. The naked pool in a bare lawn is not the easiest kind of picture material. The shadows, the introduction of the single pot of flowers and the veiling of the background have turned this into a subtle and pleasing decorative composition. Page 649.

On pages 650 and 651 we have two portraits both notable but diametrically opposite in all their characteristics. "Meditation" by Anna M. Smith is like a mural decoration in its flat tones, its artfully arranged drapery and its beautifully contrasting lights. "Helen" by J. G. Sarvent is even more simple in tone but gives a vigorous and forceful treatment because of its striking profile which is here so charmingly portrayed. One picture suggests classic repose; the other, the will to prompt and vigorous action.



NOTES AND NEWS

Die Dreifarbenphotographie, by A. von Hübl. 4th edition. W. Knapp, Halle, A. S.

This well known work, an English translation of which has been published by Klein, now appears in its fourth German edition, which does not materially differ from the previous one. The main difference seems to be that the section dealing with plate sensitizing is rather curtailed, owing to the fact that the author has published a separate monograph on this subject. In the domain of subtractive printmaking the various processes are rather summarily and sketchily dealt with; photomechanical processes at greater length.

It is, however, in the treatment of the fundamental theories and practice of the subject as a whole that the value of the book lies, which has gained for it the high position it has held for some years. — E. J. W.

The Tenth Annual Exhibition of the Pittsburgh Salon of Photography under the auspices of the Photographic Section of the Academy of Science and Art, will be held in the Galleries of the Carnegie Institute, Pittsburgh, Pa., from March 2nd to 31st, inclusive, 1923. The Exhibition will be open daily 10:00 A. M. to 10:00 P. M., Sundays 2:00 P. M. to 6:00 P. M. Press view Friday, March 2nd, 1923, from 8:00 P. M. to 10:00 P. M.

The aim of the Pittsburgh Salon is to exhibit only that class of work in Pictorial Photography in which there is distinct evidence of personal artistic feeling and execution.

All work submitted to the Committee of Selection will be carefully and impartially considered and no preference will be given the work of members of the Salon.

All Pictorial Workers are cordially invited to contribute.

Conditions of Entry

No. 1. No picture eligible that has been shown at a National Jury Exhibition in the United States prior to April 1st, 1922.

No. 2. An entrance fee of seventy-five cents must accompany each entry form, addressed to the Secretary. This fee covers the entire entry.

No. 3. Pictures, except from Foreign Countries, must be mounted BUT NOT FRAMED, as the entire Exhibition will be hung under glass. Accepted foreign pictures will be mounted by the Committee.

No. 4. Mounts for pictures must not exceed 24 inches by 26 inches, and white or light toned mounts of medium or light weight stock should be used.

No. 5 Each picture must bear on the back, plainly written, its number, title, name of the artist and return address to agree with the entry form. Sale price on entry form only.

No. 6. Not more than six pictures may be submitted by any one contributor.

No. 7. Entries from the United States may be forwarded by post or express, but foreign entries should be unmounted and forwarded only by Post, marked "Photographs for Exhibition Only — No Commercial Vaue."

No. 8. All pictures must be sent prepaid and packed flat with sufficient, substantial protection for safe conveying both ways; and must reach destination not later than February 5th, 1923. USE ATTACHED SHIPPING TAG. They will be repacked and returned After Close of Exhibition, charges prepaid.

No. 9. Unless otherwise specified, permission to reproduce is presumed.

No. 10. All possible care will be taken but no responsibility is accepted by the Salon, for loss or damage in transit or at the gallery.

No. 11. The submission of pictures will be understood to imply acceptance of above conditions.

Address all COMMUNICATIONS (not pictures; see rule 8)

To CHAS. K. ARCHER, Secretary.
1412 Carnegie Building, Pittsburgh, Pa.

Entry forms may be had by addressing Mr. Archer.

At the recent election of the Milwaukee Camera Club the following officers were elected: B. C. Dimeen, President; John H. Becker, Vice President; A. J. Goerletz, Secretary-Treasurer; E. J. Schaefer, Librarian. The club is in a thriving condition, having nearly a hundred members. During July at the annual picnic almost two hundred people were present and everybody had a good time enjoying good fellowship and making pictures.

Gentlemen:

The Dallas Camera Club was founded slightly over a year ago by the association of five earnest workers with a vision of placing Dallas on the photographic map. One was a commercial photographer, another a newspaper man, a third was chemical man for a photo supply house in the city and the other two were just plain camera enthusiasts. Since that time the club has grown until, at the present writing, the membership stands at 35, and with bright prospects of increasing this figure until the authorized limit of 60 is reached.

At first the club met in the homes of the members, later, through the courtesy of two of the dealers in town, in stores in the city. Now the club maintains its own quarters consisting of an exhibition room and auditorium capable of seating approximately 100 people, darkrooms divided for developing, printing, enlarging and special work such as bromoil, gum, carbon, etc., complete developing, printing and enlarging apparatus is installed, and a studio is in course of construction. A special room is reserved for the ladies — the wives and guests of members. When the darkrooms were built, it was thought best to keep the washing of prints and negatives, and the mixing of chemicals separate from the actual developing and printing. The result is we have what is popularly known as "The Community Bathtub" for washing prints and negatives, and the darkrooms are thus kept dry and clean.

You will appreciate that, the organization being comprised of the class of workers it was, "pictorial" photography was more an ideal than an accomplished fact. During the year, however, a considerably higher standard has been set and it is the belief of the club that remarkable strides have been taken in this direction. A number of the members are planning to enter pictures in several of the coming fall exhibitions and we hope to prove this belief therein.

As far as the writer knows, Dallas, Texas, is the only city in the South with the exception of Baltimore, Maryland, that has a camera club. There are several reasons for this, but the principal one seems to be the temperature with which we have to contend. We have received exhibitions of pictures from northern clubs and within half an hour after hanging them, several of the pictures have come loose from the mounts and fallen to the floor. Mounting with glue or white paste, solid, seems to be the only solution of this difficulty. One widely advertised product is practically useless here. Some of the members have delved rather deeply into the hot water developing problem and we now have several formulas for developing negatives in water up to 100° without the use of formalin which, as you know, has a tendency to crack the gelatine. One of our formulas, in particular, is remarkable. With it we are able to develop, rinse, fix, and wash in *running* water at temperatures up to 95° without the slightest sign of fog, frilling, reticulation or even softening of the gelatine. We have not yet succeeded in working out formulas for doing this with paper, but are now working on the problem and, no doubt, will finally solve it. The average temperature of the water here is 90° to 92° in summer. The air is considerably higher and the use of ice is rather expensive, not to mention "messy," and, even with ice, it is practically impossible to maintain uniform temperatures. We honestly believe that, when we have solved the paper question, you will see other clubs spring up in the south. In fact, we have received numerous inquiries from people in Fort Worth, Texas, who want to establish a club but are deterred principally because of the temperature problem. If they do organize, they will have numerous other questions, trials and tribulations, as the writer knows, having been with this club since about two months after it was organized.

But, Dallas being the only city in the South that has a camera club, we are getting pretty enthusiastic support from various sources in the city. Dallas is a progressive city and believes strongly in advertising. The club has been written up several times in "Dallas" the official publication of the Chamber of Commerce, we have had lots of newspaper publicity, including four full page "spreads" in the Sunday Magazine supplement of the Dallas News. This has been of great assistance to us.

Last night, the annual election of officers was held with the result that Mr. A. M. Belsher was elected president, Mr. V. H. Schoffelmayer was elected Vice President, Mr. E. H. Brown was re-elected Secretary-Treasurer, and Messrs. Wm. C. Morton and H. M. Sutton were elected members of the Board of Directors to serve with the three officers named.

One of the main difficulties of a new club, that of finances, has been solved and, with his factor out of the way, the club should grow fast from now on.

Several months ago the club opened a school in elementary photography for the benefit of kodakers in general in Dallas and vicinity. Instructions are given in the use of the camera, proper exposure, developing, printing and enlarging. No attempt is being made to inculcate artistic perception, it being our belief that this is or is not a natural instinct in a man. Some will never produce an artistic pictorial photograph as long as they live (except by accident) while others will never produce anything else. [illegible] the efforts of the school have been confined [illegible] to technical detail and in spite of the poor attendance we have been fairly successful in this. Two [illegible] joined the club after attending the school for [illegible] time, and we believe others will follow. No [illegible] is made for the instruction, it being open to any [illegible]teur photographer in Dallas county.

In November the club plans to hold an exhibition of pictorial photography and we hope to give the people of Dallas a new conception of what photography is, or may be. This exhibition will be limited to members of the club as it is really more of an advertising stunt than a competition. The club holds competitions once a month for the members, but the annual exhibition is intended first, to give the members an opportunity to display their work to the public, and to advertise the camera club. We are well aware of the fact that publicity, the right kind, and lots of it, are vital to the well being and growth of the club. With this in mind we arrange stunts that will not only be of benefit to the members but will make good newspaper "copy." One of the best we had was "Dallas by Night" in which the members made night photographs of the imposing skyline of the city from various angles. The News ran a full page spread of this and the picture that won the first prize has been printed and reprinted all over the state, as well as in at least one national magazine. — E. H. Braun, Sec.

FORTHCOMING EXHIBITIONS

Place	Date	For information write to:
Frederick & Nelson	Nov. 6 to 18 inclusive	Frederick & Nelson, Seattle, Wash
Camera Pictorialists of Los Angeles Closing date for entries, November 1st, 1922	Nov. 20 to Dec. 11	N. P. Moerdyke, Secretary 811 Washington Bldg., Los Angeles, California
Pittsburgh Salon Closing date for entries, February 5, 1923	March 2 to 31, 1923	Chas. K. Archer 1412 Carnegie Bldg. Pittsburgh, Pa.

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1. Introductory
2. Chemical Reaction
3. Light and Chemical Reaction
4. Applied Photo-Chemistry of Silver Salts
5. Chemistry of Development
6. Chemistry of the Fixing Process
7. After-Treatment of the Negative
8. Printing Processes with Silver Salts
9. Printing Processes with Iron Salts
10. Printing Processes with Chromium Salts
11. [illegible] Photography.

Appendix — Tables, Formulas and Useful Information.

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3OSTON, MASS., NOVEMBER, 1922 No. 11

THE IRON SALTS. I.

E. J. WALL, F. C. S., F. R. P. S.

EXT to the silver salts the organic salts of iron are those most used for sensitive surfaces, though many of the inorganic compounds, which are in themselves relatively stable to light, become markedly light-sensitive in the presence of organic matter. Thus ferric chloride is practically stable, but in the presence of such compounds as alcohol and gum, or gelatine, it is rapidly reduced to the ferrous state. Eder has given the following table of the relative sensitivity of the iron salts:

s oxalic acid	100
	89
alate	80
alate	78
	80
rtrate	80
rate	15
s citric acid	19
s tartaric acid	25

the ammonium ferric citrate referred to is the old brownish-red
green salt, which gives about eight times the sensitiveness, and
sed.

rinting processes based on the light-sensitiveness of the iron salts,
are but little used, and others completely obsolete. A brief sum-
will be given.

UE-PRINT PROCESS. — Probably this is the most widely used
processes, for the production of "blue prints," so much used for
ans. The prints show white lines on a blue ground from a drawing,
itive from an ordinary negative.

used is the ammonio-citrate of iron, which is reduced from the
te by the action of light. When developed in water, the po-
hich is also present in the coating, immediately reacts with the
familiar Berlin blue image.

. — This gives blue lines on a white ground from a drawing and
white image on a blue ground from a negative. Here the sensi-

tive mixture is ferric chloride and tartaric acid with gum arabic, and the action of light is to produce the ferrous salt, which reacts with potassium ferrocyanide, which is used as a developer, to give a white image, whereas the ferric salts unreduced by the light again form insoluble Berlin blue. We have, therefore, practically the reverse action to that in the cyanotype, but in both cases the image is formed by the different action of the ferric or ferrous salts with ferricyanide or ferrocyanide.

PLATINOTYPE. — In this process the light-sensitive salt is ferric oxalate, again reduced to the ferrous state, and this latter dissolves in the alkaline oxalates and other salts used as a developer, and reduces the platinum salt, which is in itself not affected by light, to the metallic state. Metallic platinum is the most resistant of all metals to chemical action, free chlorine being about the only thing that attacks it, therefore, a platinotype is the most permanent of all photographic prints, even more so than the paper on which it is produced.

SEPIATYPE. — Here again, we have the light-sensitiveness of the ferric citrate, in the presence of silver nitrate, and the latter is reduced by the ferrous salt to the metallic state. Obviously this process does not do away with the use of hypo.

KALLITYPE. — Ferric oxalate is the sensitive salt, the image being formed of metallic silver, which is reduced by the ferrous salt which is dissolved by the developer. There is obviously considerable similarity to the course of reactions of platinotype.

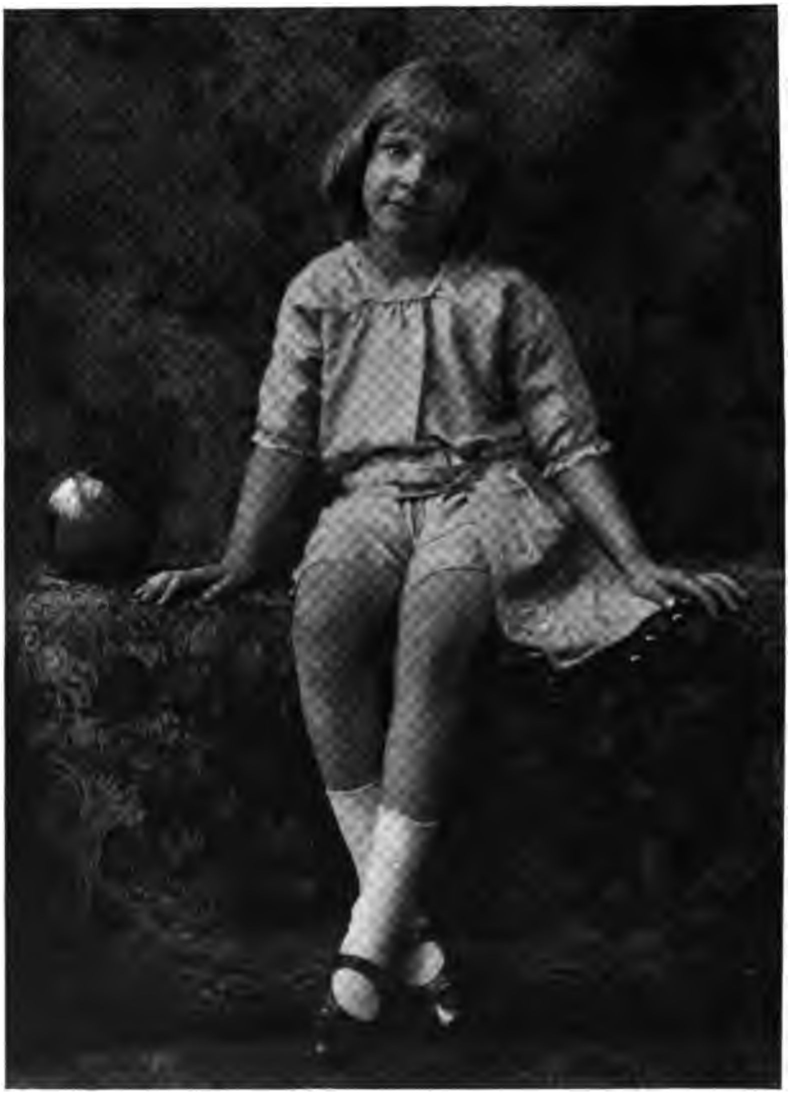
Of the dead and gone processes we have chrysotype, one of the very earliest of all printing processes, in which ferric citrate was used as the sensitive salt, the image being obtained in metallic gold. Obernetter's process, also called cuprotype, is based on the light-sensitiveness of a mixture of ferric and cupric chlorides, cuprous chloride being formed, and on treatment with potassium sulphocyanide and then ferricyanide, reddish-brown cuprous ferrocyanide is formed. It will be seen that there are other processes also.

To those who want to use the ferric salts as sensitive agents there is one fundamental advice which should be most carefully noted, and that is that it is very rarely that a ferric salt, such as the citrate or oxalate, is fit for use as purchased. It has been stated that the organic iron salts are sensitive to light and it is unusual for the stock in an ordinary drug store to be protected from light, so one frequently meets with trouble from this source. Another point is that all ferric salts are extremely liable to be reduced to the ferrous state by the absorption of carbon dioxide, or carbonic acid, from the air. This is well seen in the case of ferric oxalate solution kept in a half-filled bottle, when the basic salt can be seen to form as a pale yellow crust on the surface of the liquid, and will gradually fall to the bottom of the bottle, forming a deposit of the characteristically colored ferrous oxalate. That a solution of ferric oxalate, even in a completely filled bottle, is light-sensitive, is proved by the fact that the side of the bottle turned to the light becomes in time encrusted with a deposit of the orange ferrous salt, and this although distilled water may be used.

Although it is a little trouble, it is well worth while, if one wants to dabble in kallitype or platinum printing, to prepare the ferric oxalate oneself. One can then be quite sure that it is in good condition and suitable for the work.

The simplest method is that proposed by von Hübl, which has as its raw material ammonia iron alum. This, although called an alum, does not contain aluminum, but is a double sulphate of ammonia and ferric iron and has the formula $(NH_4)_2SO_4, Fe_2(SO_4)_3, 24\ H_2O$. It occurs in fine amethyst colored crystals, usually quite large, and it should be free from any adherent yellow powder.

To make the ferric oxalate, weigh out 52 g (400 gr.) of the iron alum and add 52 ccm (400 minims) of distilled water, and heat till dissolved. A slightly orange-colored solution



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MINYA DÜHRKOOP-DIEZ

is obtained, which should be allowed to cool slightly; then add 20 ccm (154 minims) of strong ammonia, and stir well. One may now proceed in one of two ways. The original method was to place the mixture, which is now a thick reddish liquid, due to the precipitation of ferric hydroxide, in a tall cylindrical graduate, one capable of holding 100 ccm, fill up with distilled water, shake well and allow to settle and then syphon off the supernatant liquid, and repeat this operation till the washing water no longer gives a precipitate with barium chloride, or no longer smells of ammonia. Unfortunately this is a very tedious job, as it may take two days or more.

If one has a Buchner filter and a suction filter flask that can be fitted to a water supply with an aspirator, the washing may be completed in about a couple of hours. But there are few amateurs who have these simple appliances and therefore the following simplification is suggested. Filter in the usual way through filter paper, using as small a circle of paper as one can; about 4 ins. should be quite large enough, with a little care. Allow the filter to run as dry as possible and then pass more distilled water through, allowing the precipitate to become so dry that the wash water no longer drips from the funnel. As soon as the washing is complete all further work must be carried on by artificial light.

If the original plan is preferred, then the precipitate and water, in which it is suspended, must not exceed in bulk 85 ccm (1440 minims); now the reason for using the tall graduate will be seen, as one can easily read off the bulk. To this should be added 21.5 g (332 gr.) of pure oxalic acid, and the mixture stirred till a perfectly bright green solution is obtained, which should be filtered and the bulk made up to 100 ccm (3 oz., 249 minims).

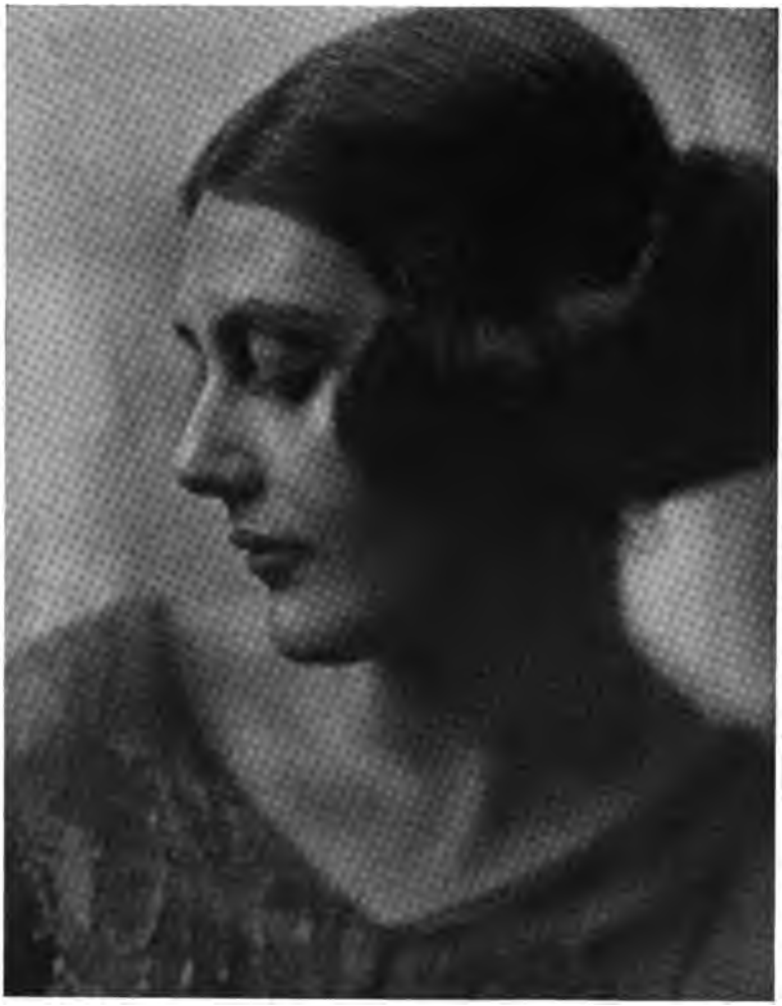
In the modified method the above quantity of oxalic acid is weighed out and dissolved by gently warming in 60 ccm (2 oz.) of distilled water and then poured on to the ferric hydroxide on the filter, and the red precipitate will begin to dissolve, the liquid turn green and run through the paper quite bright and clear. If there are any traces of red peroxide left on the paper the liquid should be passed through again, and finally enough distilled water should be passed through to make the total bulk as before 100 ccm.

The result will be a 20 per cent solution of ferric oxalate, with an excess of 1.2 per cent of oxalic acid; this is the normal ferric oxalate solution for the platinum process and it may be used for all other printing processes in which ferric oxalate is required.

With regard to the ammonio-ferric citrate, one should hardly attempt to make this, but in all cases the green salt should be obtained from a reliable house. The old red salt is a basic double salt of ferric and ammonium citrates with ferric hydroxide. The green salt is a mixture of neutral ammonium ferric citrate with acid ferric ammonium citrate and ferric citrate.

This is specially used for the cyanotype process; but before dealing with this it is advisable to say a few words about its companion, the potassium ferricyanide. Nothing but the pure salt that sold as a "reagent," should be used. It should be in perfectly pure ruby-red clear crystals, without any adherent yellow powder. Before use the crystals should always be washed to free them from any possible contamination of the ferrocyanide, which is the yellow powder, and which will prevent one from obtaining pure whites in the prints. It is not advisable to keep this salt in a stock solution, only enough being weighed out as required for immediate consumption. But as the crystals have to be washed, and thus lose a little, a little extra should be allowed for this in weighing out; but very little, not more than 1 per cent.

To wash the crystals they should be dropped into a graduate filled with distilled water, for instance if 1000 ccm, or 16 oz., of solution are required, then half the quantity of water may be used. As soon as the crystals have reached the bottom of the graduate they will be sufficiently washed and the water should be poured off.



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A test for freedom from the ferrocyanide is to add a drop of dilute ferric chloride solution, or other ferric salt, when the presence of ferrocyanide is shown by a blue tinge. Actually the best way is to put a drop or two of the ferricyanide solution on a sheet of opal glass or other white surface, and then with a glass rod put at the side a drop of the ferric solution, and then mix; this shows the blue tinge very readily. Ordinary paper should not be used for the white surface, but filter paper may be, and if the drop of ferric solution is placed in the center of the wet patch formed by the ferricyanide, the blue tinge is very apparent.

The best ratio for the two salts is as follows (Valenta, *Jahrbuch*, 1898, **12**, 448):

A.	Green citrate	125 g	960 gr.
	Water	500 ccm	8 oz.
B.	Potassium ferricyanide	45 g	346 gr.
	Water	500 ccm	8 oz.

These solutions are mixed just before use. Although the quantities are given for the usual bulk of 1000 ccm (16 oz.) it is not advisable to mix such large quantities; only as much should be mixed as will be used at one time. For, although the mixed solution will keep for some time in a well-stoppered bottle, there is always danger of oxidation, and the paper will not then give pure whites.

The paper used for this process may be of any kind; but, naturally, fairly smooth, well-sized papers are to be preferred. Wood-pulp papers are always apt to give dark blue spots and streaks, but some of the better class of these can be used. A very simple test for a paper is that given by Valenta (*Chem. Ztg. Rep.*, 1916, 104): dissolve ferric ammonium citrate 1 g (15½ gr.) in 40 ccm (676 minims) water and add potassium ferricyanide 0.6 g (9 gr.), then boil a strip of paper in the mixture for about 2 seconds; no blue tinge should be formed in the paper.

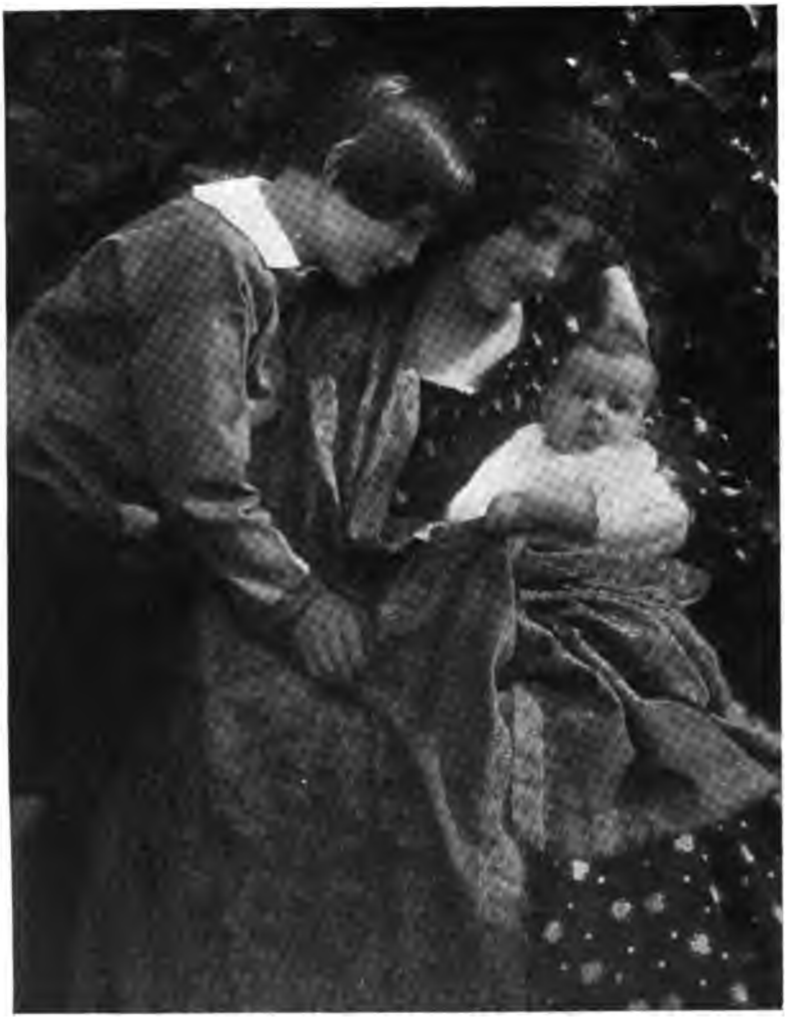
It has been suggested, in order to keep the image on the surface of the paper, that either the paper should be resized with gelatine, or dextrine or gum should be added to the sensitizer. There is, of course, no fundamental objection to this; but as the whol purpose of the cyanotype paper is to furnish a rough working plan, this is an unnecessar refinement. One rarely wants to print from an ordinary negative in the vivid blue o cyanotype, for the color is not suitable for ordinary views, except possibly ice and glacie scenes, and these can be much more effectively dealt with by the cyanotype toning of a bromide or development print.

To coat the paper properly requires a little knack and some care. The best way is to use a drawing board as a support during coating. Two glass-headed pins should be use to pin the two top corners of the paper to the board, which should be supported on a slant by a block of wood or a couple of fairly thick books.

It is very important, however, that the sensitizer should not come into contact wit the metal of the pins, and to prevent this, guards should be used. These may be conveniently made from a card; an ordinary visiting card cut in two is about the most convenien to use. This gives two pieces, about 1¾ x 2 inches, and if the opposite edges are eac turned up for half an inch, the pin can be driven through the middle of the flat piece an there is little danger of the solution reaching the metal.

Two brushes are required, and these should be preferably of hog's bristles, about 1 t 1¼ inches in length. A flat and a round one will be required; the flat one need not b more than 2 inches wide and the round one about 1½ inches in diameter. *They must n be bound with metal.* This is very important.

The paper should be pinned to the board and the sensitizing solution preferab



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poured out into a household saucer. The flat brush should be dipped into the solution, as far as it will go without getting the solution into the binding of the brush. Then with one even sweep the brush should be passed over the surface of the paper across from left to right at the top of the sheet, the brush again dipped in the solution and another sweep made just below the first one, and this continued till the whole of the sheet is covered with the solution.

There is one point that is so obvious that it may seem puerile to mention it, but I have seen this neglected, because, as the man said, "I didn't think." The vessel containing the sensitizer should be placed at the left hand, quite close to the board, so that it is not necessary to carry the brush, saturated with liquid, over the paper, thus giving it every chance to drop some of its contents on the paper. If this happens a darker spot is almost certain to appear later in printing. If the saucer is placed at the side, the brush may be charged with the solution and at once transferred to the paper.

The coating of the paper should be done as rapidly as possible. As long as patches are not actually missed unevenness of coating is of no moment, if one works rapidly.

As soon as the whole surface of the paper has been gone over it will appear here and there with wet streaks, and with others partially dry. Then the round brush should be brought into play and the whole surface gone over in rapid circular strokes, each overlapping till the coating appears evened out and no longer shows unequal wet streaks.

If during the sensitizing the paper should cockle, and it always will, through expansion, one of the pins should be taken out and the paper restretched.

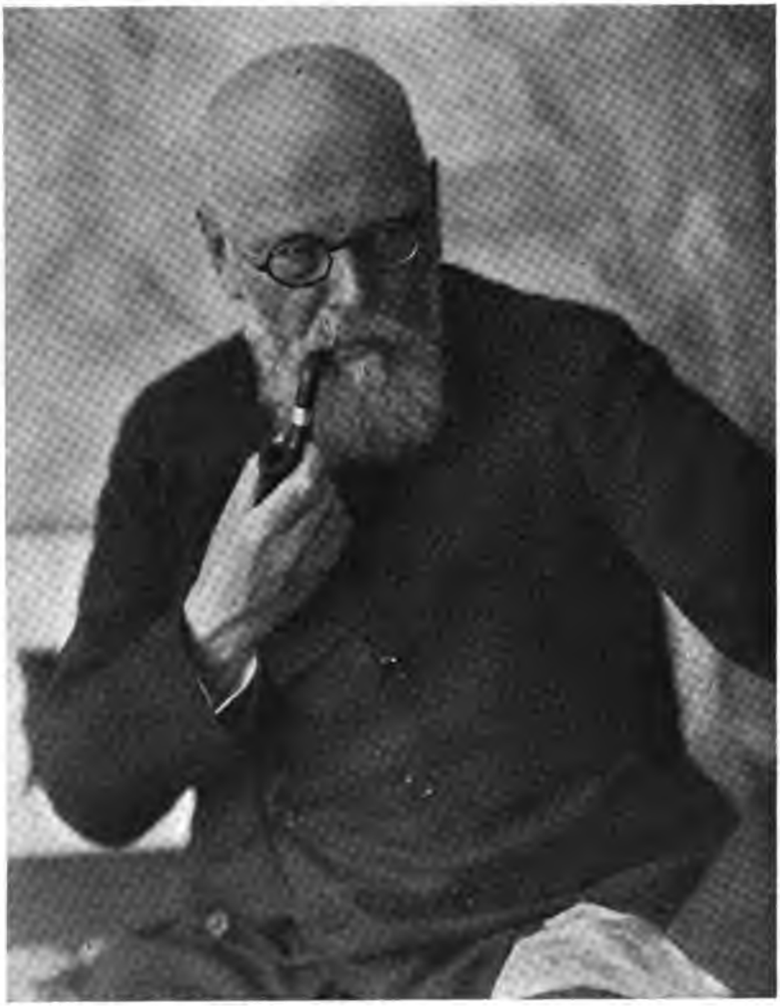
The most important part of the sensitizing is the drying, and here many fail, and then blame the chemicals or paper. If the paper is allowed to dry spontaneously by merely hanging it up, perfect results cannot be looked for. The paper should be practically dry in five minutes.

Commercially the paper is passed over hot rolls and a current of hot air driven over it; but for small work the best thing to use is one of the electric hot-air dryers, used by hairdressers and bootblacks. This should be held about ten inches from the paper, which may be left on the board, and if the hot air be directed to the lower edge of the paper and moved, if the paper is any size, across and up and down, the paper will be dry in five minutes, but the heat should be continued for at least ten. Paper thus prepared, if thus dried, will keep in the dark for a fortnight.

There are one or two points that must still be dealt with. Sensitizing must be effected by artificial light and not too brilliant a light at that. Before the brushes are taken into use they should be well washed, for although they are new, this does not necessarily mean that they are chemically clean. The best way to clean them is to wet them with warm water and rub them on a piece of soap, or in soft soap for preference, then work them into good lather in the palm of the hand, then wash out in clean warm water. Repeat this operation at least three times and finally use three or four lots of hot water to rinse them. Hang them up by the handle to dry. If the handle has not a hole in it, an ordinary wooden clip may be used, and this hung over a line. This prevents the water from soaking into the binding and prolongs the life of the brush.

After use rinse the brush two or three times in water acidulated with acetic acid, or citric, about 1 per cent, then immerse in fresh acid water for at least five minutes, taking care to keep the binding out of the water, then wash in distilled water and hang up to dry. A dirty brush, or one charged with remnants of a previous sensitizer, always leaves its mark in the form of dark streaks visible on the finished print.

Various additions have been suggested to the sensitizer, for instance, 0.5 per cent of



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oxalic acid; this would mean 50 g or 380 gr. added to the above quantities of sensitizer. This gives even greater rapidity of printing; but naturally the paper will not keep so long, and in my experience it is not worth while. The addition of 0.05 per cent of potassium bichromate gives a better keeping paper and gives purer whites, and also slows the paper a little.

The exposure varies naturally according to the thickness of the tracing cloth or paper, and if a non-reversed print is required from a line drawing, it is obvious that the back of the drawing must be in contact with the sensitive surface. Printing in direct sunlight is advisable and the insolation should be continued till the lines of the drawing appear of a somewhat dirty yellow on a distinctly bluish-green ground. It is better to give a fuller rather than a short exposure, as the color of the ground is then much deeper.

Development is effected by bodily immersing the paper in water, preferably face down, when the ground instantly turns a deep blue and the lines show up white. As soon as the lines are clear the print should be transferred to clean water, and washed either with

PORTRAIT MINYA DÜHRKOOP-DIEZ

a spray or in running water for at least ten minutes and then hung up to dry. It is a good plan, however, to place the print on a board or glass and blot off the surface moisture with blotting paper or a lintless cloth. This prevents spots from adherent water drops.

Many dodges have been suggested for toning blue prints, such as treating with ammonia and then acid, or with catechu, or ammonia followed by dyes. These are best left alone. There are only two tricks worth trying. One is developing the prints on a 0.2 per cent solution of potassium ferricyanide instead of water; this gives more stable and more contrasty prints. The other is immersion of the print in a 1.25 per cent solution of ammonia until the blue image disappears; then well wash and float on a 2 per cent solution of tannin. A blackish-brown color is thus obtained. Or the print may be washed in distilled water, and by yellow light bleached by immersion in a 2 per cent solution of silver nitrate, then washed in distilled water, subjected to the fumes of ammonia and exposed to white light and developed with ferrous oxalate. A black image is thus obtained. In special cases these may be used, but better results can be obtained by other

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First Prize, September Senior Competition

the registration of the apparatus is imperfect. The buckling of unmounted photographs is sometimes remedied by ironing or by photographing under glass, if care is taken to avoid reflections.

There is a tendency to stop down, because of the assumption that sharpness will thus increase proportionally. Beyond moderate limits, there is not a great advantage, especially with anastigmats. Of course, the increased depth takes care of errors of registration in apparatus. It is much better to adjust such errors, so that you can use the advantages of critical focusing at large apertures. Larger apertures tend to more brilliancy in negatives. The need of accuracy in apparatus is most intensified with fine line subjects or copies to scale, where the lens aberrations may figure. With abnormal lights there may be some change of focus due to the composition of the light rays being different from daylight, but this is not likely to happen, especially when filters and color sensitive plate are used. What is more probable is a change in image size, due to zonal aberrations left uncorrected. The plane of sharpest focus shifts on stopping down, making some refocusing necessary if the image size must also be maintained.

Many of the troubles in copying disappear when panchromatic plates are used. Even if a photograph is entirely in tones of the same color, it may yet vary in its action under the light. The white parts may really be yellow and photograph dark, which reduces contrast. The use of filters and their proper selection is a whole subject by itself. Only rarely does a subject come up that cannot be greatly improved by their intelligent application. I do not mean to imply that copying cannot be done with ordinary plates.

When only such are available, the slower have advantages in latitude for errors of exposure and development. I have seen very good copies made with fast plates, but as a rule the slower emulsions work better and the ordinary man wastes less material.

Development of panchromatic plates by the tank method gets away from the danger of fogging plates by unsafe lights and reduces marks from handling the film unnecessarily, but often only one plate is handled at a time and tray methods are more convenient. When exposure is fairly standardized, time formulas in developing give uniform results. The aversion to panchromatic plates by some workers seems to be founded on prejudice rather than on experience.

Black and white copying differs from the reproduction of continuous tone subjects. We have instead fine image lines on the plate, adjacent to bright patches of considerable area. With great reduction, the actual width of the fine lines is very small. The white patches on the copy reflect much light and, as the camera is extended, the light-pocketing action of the bellows folds is less. Such reflections tend to veil over lines, and in addition there is a spreading sidewise of the light action in the film, a sort of halation known as "irradiation." Thus effect and vibration troubles have more chance to develop with longer exposures. The images produced by highly corrected lenses are always blacker than those from ordinary types, as proven by the projected images in lens tests. There are no uncorrected rays falling on the wrong spots, one of the reasons why an anastigmat can dig into shadows and show up faint detail and low gradations.

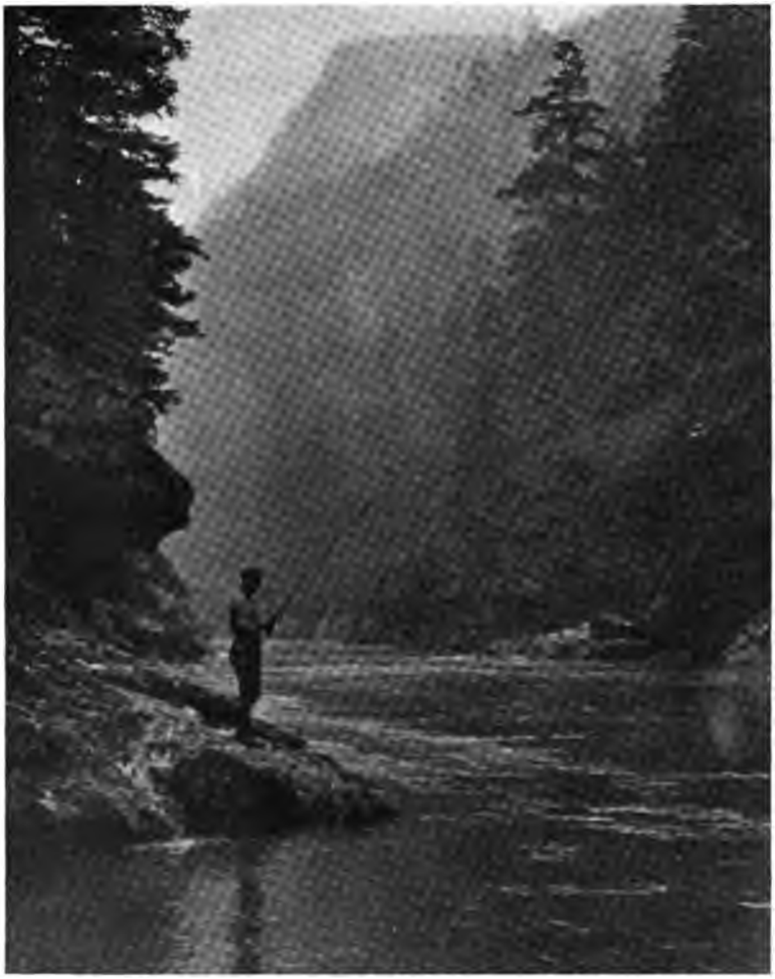
When black and white work is frequent, it is well to verify the registration of the holder and focusing screen, and use only tested holders. We often find in photographers' outfits holders not made by the camera manufacturer. Errors ordinarily of no importance cut some figure in this accurate work. The bother of adjusting only comes once, and is very simple in practice. You need a truly flat stick to rest on the sides of the plate-holder with a wood screw in centre. This can be adjusted so that it touches a dummy plate placed in the various holders, and also laid across the ground glass frame in a similar way.

Sometimes broken ground glasses are replaced facing the wrong way, which at once destroys the register. On view cameras, the glass side faces out universally, but on other types the position varies, hence this warning. Focusing screens and sensitive plates are not absolutely flat. In practice, the latter are concave on the emulsion side, which will force some stopping down for precision work. Select your ground glass with care.

To focus precisely, a very fine ground glass or substitute is needed. They are harder to use than ordinary types and require magnifiers. Most so-called focusing magnifiers, reading glasses, etc., are of no value in fine work. The proper types are those of tube form, where lenses can be locked at a definite point, after focusing sharply on a transparent glass with some surface mark. Such magnifiers when applied to ground glass show when the image comes to focus, without adding errors of the eye produced by hand-held glasses at varying distances.

For more transparency than ordinary ground glass will give, special iodide screens can be used. These are made by fogging a slow plate; after fixing, the silver is bleached by potassium iodide solution of iodine. Ammonia water will remove any yellow stain, and celluloid varnish will protect the surface. They grow yellow in time but this is not objectionable.

Extreme accuracy in focusing can be reached by parallax methods. A ground glass or iodide screen is made, with a clear glass patch in centre. On this a reference mark or scratch is made, or a bit of tin foil with a straight edge cut by a safety razor blade is pasted on the spot. The image is focused as usual, but changes are detected with the focusing



WHERE THE HILLS ARE HIGH AND THE TROUT ARE LARGE

J. B. GALE

Second Prize, September Junior Competition

glass by the amount the image seems to move in relation to the reference mark, when the eye position shifts slightly from side to side. When no movement can be detected, the image and screen are in the same plane. This method is quite independent of errors of eyesight. It is of course obvious that the axis of the lens must be truly perpendicular both to the copy and to the ground glass in all accurate work.

With correct exposure, development of slow plates will take care of itself. The point to avoid is blocking up of the lines. These should stay perfectly transparent while the black parts develop to opacity. If the lines veil over, from prolonged exposure, developing or other causes, later intensification is more complicated. When the error is towards underexposure, the blacks can be built up by the density-giving intensifiers. An overtimed plate must be cleared in the lines before intensification can be attempted. The proper printing paper is the contrasty, and photographers who are familiar with the various printing materials can often correct slight errors without any intensification at all.

TIMIDITY

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"Opaque" is very
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up to the outer edge of

JUVENTINO OCAMPO

Third Prize, September Senior Competition

nife, or an ordinary well sharpened penknife. A knife is very useful
ary highlights, such as, for instance, lights reflected by buttons,
For reducing larger areas some one of the many forms of abrading
he "hi-lite" reducer, made of fine strands of spun glass, is better
sier to manipulate. The art of using a knife is harder to master
ncil, yet it is an accomplishment that should be learned, as it is of
nsiderable practice is needed before the user becomes really expert.
ld so that only the surface of the negative is touched and the emul-
very, very lightly. The knife must not scrape or drag, or the work
tle careful practice on an old negative will be necessary to get the
n a box of candy or a good cigar coupled with an agreeable and re-
ill be an "open sesame" to a profitable acquaintance with a "real

otting colors are needed to clean up pinholes and deep scratches.
ied to the negative with a fine "spotting" brush. If a pen point is
application great care must be used to avoid damaging the fragile
ir.
y useful for "blocking out" objectionable backgrounds. Often a
with a new value and more convincingly if the print is made with a
ackground. This effect is easily secured by opaquing the negative
f the subject. The resulting print will show the subject against a

at their corners sho
triangular catchlig
give the portrait a

Eyebrows may
ful application of t

A crooked nos
lightened or evene
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Hollow cheeks
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is overdone a "hea

Receding chin
upper part a little.
greater depth and

A shadow sho

THE CALM WATER **Koji Hoshii**

First Prize, September Junior Competition

their corners should be eliminated. On the pupil of the eye there should, usually, be a ngular catchlight. If this is round or bead-shaped, it will impart a lifeless stare and e the portrait an unnatural appearance.

Eyebrows may be arched a little or may be softened, if they are too dark, by the care- application of the pencil.

A crooked nose will be straightened, as if by magic, when the shadows at the side are tened or evened up. Flat nostrils can be given a better appearance if a sligh high- t along the ridge is introduced by careful pencil work.

Hollow cheeks, or cheeks in which a healthy, red color has come out too dark in the ograph, may be filled out by retouching, but here caution must be exercised, for if it erdone a "heavy" look is imparted to the subject.

Receding chins may be built up to order, by the simple expedient of lightening the r part a little. A small shadow, just under the lower lip, produces the illusion of er depth and roundness of the entire face.

A shadow should always be visible between the neck and the jaw. Squaring up the latter and adding a highlight to the "point" will give the subject a forceful individuality.

In portraits of women, if the neck appears "bony," the artificial aid of retouching may be called into service.

Reams of paper and gallons of ink have been used up in giving instructions as to the manipulation of the subject's hands. Beautifully posed hands are rare. They are hard to manage, and to make them appear graceful and at the same time natural is one of the problems of portraiture. If the veins are over-emphasized, retouching will help. Sometimes it is necessary to reduce them a little in size by the careful use of the etching knife.

Draperies that are light in color may need a little local reduction. Any of the specially prepared reducing pastes, or a bit of cotton, moistened with alcohol, used as an eraser, will much improve the print. Sometimes the use of the knife is necessary to improve outlines.

As a general and very broad rule, it may be stated that in portraits of ladies under thirty, all lines and wrinkles may be removed. Over this age, the objectionable "footprints of time" may be eliminated and other character lines softened as much as may be considered necessary. Portraits of men usually require very little actual retouching, only a general "cleaning up" and softening of too aggressive shadows.

The best advice anyone can offer to the tyro, wandering down the grey road to success, is: Use sane judgment, practise constantly, and study, study, study.

Of course we must not forget that much of the retouching, once thought to be imperative, may be eliminated by skilful and intelligent lighting, by careful focusing and by the use of a suitable lens. Perhaps, in time, retouching as we know it, will become a "lost art." And that will be well, for it is sometimes of incalculable detriment to the truthful condition of any subject to which it is applied.

"Get it in the lighting" is the slogan of the new order of photographic portraiture.

PINHOLE EXPOSURES

BERTRAND H. WENTWORTH

THIS article is addressed to those who have experienced difficulties in determining the correct exposure in the use of pinholes, and to those who have hesitated to undertake their use from fear of such difficulties. I shall point out some of the principal sources of these troubles and explain my remedy for them. I shall try to express these purposes in simple terms, intelligible to all who understand the fundamental principles on which the *f* system of stops is based. Advanced workers will find some paragraphs which they can skim or skip to advantage. Such parts are included to make my argument complete and clear to those who are less conversant with such matters.

The advantages and disadvantages of the use of pinholes are too well known to need extended mention here. A set of five pinholes gives the worker choice of several degrees of diffusion of the image; all of these images are free from the ordinary aberrations of lenses; all of them have infinite depth of field, no matter what extension of bellows be used;

A TAPESTRY DESIGN

L. A. GOETZ

Pittsburgh Salon, 1922

and, from the last it follows, that, within the limits of the bellows capacity, any desired focal length may be used — any angle of view. The depth of field may be a disadvantage in many cases, since the emphasis of planes, obtainable with lenses, and in particular with soft-focus lenses, is not available.

This brief statement should enable anyone to decide whether a set of pinholes will be of service to him if he can find a way to secure certainty of results in their use. In nearly all of my problems, I prefer the use of a soft-focus lens, as against the pinholes, because of its power of differentiation of focus in the planes of the subject; and, of course, for its speed. I always carry a pinhole attachment, however, as a reserve power to be used when extremes of near and distant planes have to be dealt with, and when the most desirable angle of view is one not provided by any of my lenses.

The three outstanding disadvantages of pinholes are all due to the very small quantity of light which they are capable of passing, since the holes must needs be small to yield images of sufficient firmness. These disadvantages are: first, the long exposures necessary; second, the difficulty of viewing the image on the ground glass; and, third, the difficulty of determining the correct exposure.

The first of these disadvantages is an inherent difficulty which bars the use of pinholes in all cases where motion in the subject would defeat the operator. The second is not serious, because a hole large enough to produce a visible image may be provided to enable the operator to make sure that his picture is properly composed within the bounds of the plate; and no focusing is necessary — the image always being in focus, no matter what extension be used.

The difficulty of determining the exposure is the particular subject of this paper. In theory this difficulty should be less than with lenses. In practice much trouble is encountered. The writer has had his full share of troubles. He has overcome them once for all, he thinks; and he offers his solution here to all who are interested in the subject.

I promised, in the first paragraph, to point out the principal sources of these troubles, but I must needs speak only of my own. In my experience my troubles in reckoning exposures have been due primarily to my acceptance, on faith, of the conclusion of the man to whom I feel most indebted for his contributions to this subject, Dr. H. D'Arcy Power. I suppose that most of us who since the publication of his monograph (*Photo-Miniature* No. 70, 1905), have begun the use of pinholes, have similarly accepted his exposure formula.

Dr. Power's experiments were made with a series of holes, numbered respectively 1 to 5, and of the following diameters, in millimeters:

1.00 0.75 0.50 0.375 0.25

His exposure rule was stated as follows: "The number of the hole used, multiplied by the extension of the camera, equals the *f* value of the hole, providing the resulting exposure time is read in minutes in place of seconds, or in other words multiplied by sixty." In its inception, this rule was not derived from the mathematics of the problem, but from observations made in comparative exposures with lens and pinhole. These tests were made with one hole, and the findings were computed for the other holes, upon the premise of a supposed relationship in the light-passing power of his series. But Dr. Power's premises were false, for he had already fallen into an error in establishing the diameters of his holes. Of these diameters he says: "Starting with the millimeter hole as No. 1, the rest diminish in such a ratio that each passes half the light of the preceding. This is a great simplification, and makes transition from one hole to another an easy matter." The inaccuracy of the preceding statement is easily demonstrated by the application of

AN ADOBE IN CALIFORNIA Oscar Maurer

Pittsburgh Salon

the rule that the areas of circles are proportionate to the squares of their diameters The squares of Dr. Power's diameters are:

1.00 0.5625 0.2500 0.140625 0.0625

and these figures accurately show the relative light passing power of his holes. It may be noted that, while in no case does any hole pass just one half of the light passed by the preceding one, there is this accurate relationship: each hole passes one fourth of the light passed by the second one preceding. Beginning with a diameter of one millimeter, the required diameters of the holes, that each may pass one half of the light passed by the preceding hole are:

1.00 0.70711 0.50 0.35553 0.25

the squares of these diameters being

1.00 0.50 0.25 0.1250 0.0625

Now as to Dr. Power's formula for exposures, which I have quoted, it is not easy to put to the test of mathematics a formula based on hole diameters expressed in millimeters; on extensions expressed in inches; on the fortuitous relationship of the diameters to their arbitrary numbers; the result to be multiplied by a constant of sixty. It does not, however, seem to be necessary to work out this intricate problem, since I may quote Dr. Power: "For this formula to be both accurate and of easy application, it was necessary to have the pinholes accurate in size, and the sizes standing in a simple mathematical relationship to each other." We have found that Dr. Power's holes do not bear the relationship to each other that he supposed, and we may conclude that his premises being wrong, his conclusions are inaccurate. Mr. Edward B. Mallory, in *The Photographic Journal of America*, June, 1920, after demonstrating the incorrectness of the relative values of Dr. Power's pinholes, undertook to apply mathematics to discover a series of constants which should be more accurate than Dr. Power's constants (hole numbers). Unfortunately Mr. Mallory did not set forth in detail the steps in his calculations; but we may still examine the soundness of his final formula for field use, which he states as follows: "After the exact diameters of pinholes have been determined, it will be apparent from the formula that a constant (*f* value at unit focal length) may be obtained by the portion of formula $\frac{l}{d \times 10}$, it then being necessary to simply multiply the focal length in each case by this constant to obtain the *f* value." It should be borne in mind here that by *f* value in this statement, Mr. Mallory, like Dr. Power, contemplates a reading in minutes instead of seconds.

In the examination of this method, let us begin with the simplest of all formulas, $\frac{l}{d} =$ *f* value, in which "*l*" is the focal length and "*d*" a hole-diameter expressed in the same terms; for instance:

$$\frac{\text{5 in. (focal length)}}{\text{½ in. (hole)}} = \text{a true } f \text{ value of } f{:}10.$$

Now let us see what is the effect of adding to the above formula the element introduced by Mr. Mallory (multiplying the divisor by ten), so that we would have:

$$\frac{\text{5 in. (extension)}}{\text{½ in. (diameter)} \times 10} = \text{a quotient of } 1.$$

If there were no conversion of seconds to minutes and if this quotient were read as an *f* value, the required exposure would be, by comparison with the preceding problem:

$$10^2 : 1^2 = 100{:}1$$

But Mr. Mallory's field formula calls for reading minutes for seconds in calculating the exposure, so that this resulting exposure would be represented by 60. In my opinion, the use of the Mallory constants will result on theoretical grounds, in exposures 60% of normal; and such has been the result of my many attempts based on them.

I have had no experience with "the Watkins pinhole lens," nor have I subjected his system to analysis. I have nothing to say, therefore, about the Watkins method, further than to quote Dr. Power: "It (Dr. Power's method of determining exposure) has also been adopted by Mr. Alfred Watkins." If so, it is subject to the same inconveniences, if not to some of the inaccuracies.

If the reader has found my foregoing analysis sound, he may ask how, then, is it that both Dr. Power and Mr. Mallory seemed to substantiate their theories by elaborate tests, and in practice; and the question will be quite fair and practical — the proof of the pudding being in the eating. I do not doubt that strict application of Dr. Power's rule to any given hole will bring the exposure within the latitude of the plate, but the apparent simplicity of the rule disappears in actual practice when one has applied it and obtained an *f* value of say *f*:25 or *f*:82. He must then square this *f* number, and work out a problem in proportion between that square and the square of some other number occurring in his tables or meters. This is tedious, even if the subject will wait, and one is tempted to

ARCH, BLAIR HALL — WILLIAM D. SPEAR

Honorable Mention, Second Annual Competition

developed in one tray with a normal developer, for four minutes. Prints were made with uniform exposures from six negatives, on the same paper, and developed for the normal time. The differences between these prints — aside from the differences of diffusion — are so slight that they would not be distinguishable, probably, in their half-tone reproductions.

Having, necessarily, written so much in criticism of Dr. Power's and Mr. Mallory's findings on this subject, I do not like to close this article without further grateful acknowledgment of my debt to them for their investigations. Without patient study of their work, I would not so soon have found the key which, I believe, unlocks the final truth of this vexed question of pinhole exposures. I owe a similar debt, through correspondence, to Mr. Edward Heim of New York, who has for twenty-five years used successfully a series of three holes based on a unit distance of one inch.

To sum up the whole matter briefly: all of the troubles in calculating pinhole exposures are due to the use of holes that do not conform to the *f* system; and the consequent introduction of uncertain quantities into the problem; and the remedy is to have holes made so that each shall, in truth pass exactly one half of the light passed by the next larger, and in conformity to a simple normal series of *f* numbers, based on the unit of measurement of the extensions.

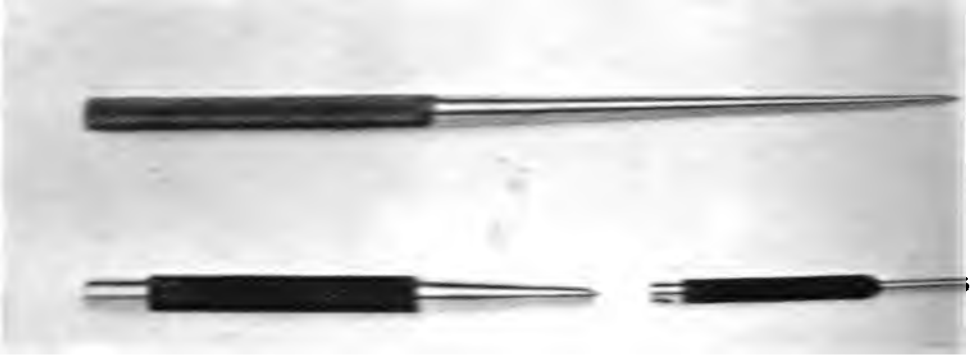

Fig. 2 H. G. Pea

COMMERCIAL PHOTOGRAPHY

HARRY G. PEARCE

PHOTOGRAPHY today plays a very important part in the vertising world. In looking through the advertising pages the big magazines we see in almost every one of them cuts have been made from photographs. Very few photograph realize what an important part their work plays in the fie advertising. Expediency and speed of production in too m cases are the only considerations. A little more time trouble spent in making the original negative greatly red the work required at other stages in the production of the fin picture and, at the same time, it increases business for the photographer because hances the quality of the results.

When a print is received at the point of publication it is usually sent to the ar partment, where it has to be retouched until it will make a good reproduction. Th so much of this to be done that publishers and photo-engravers who do a large volu business usually have a department for this retouching of photographic prints. work consists in putting in highlights, strengthening lines, blocking out certain por changing the background and sometimes putting in a new one and very often, when get through, the whole print is nearly completely covered with Chinese white and ink. Any lettering there may be on objects in the photograph almost invariably ne be touched up.

My object, right along, has been to do as much as possible of this work befo negative is made, thus eliminating much of the work needed later and making the fi half-tone more photographic in appearance. Why leave all this work for someo to do when it can be done in the studio by spending a little time and thought arrangement and lighting of the objects photographed? On my negatives I alw to bring them to a point where retouching can be reduced to a minimum or don with entirely. It is not possible to do this in every instance. There are some that can be obtained only by hand work on the prints.

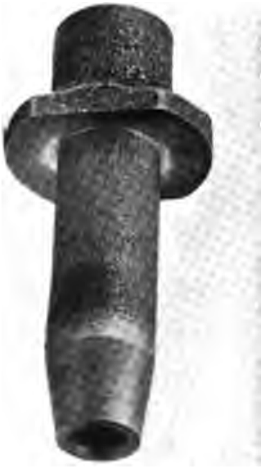

Fig. 1 H. G. PEARCE

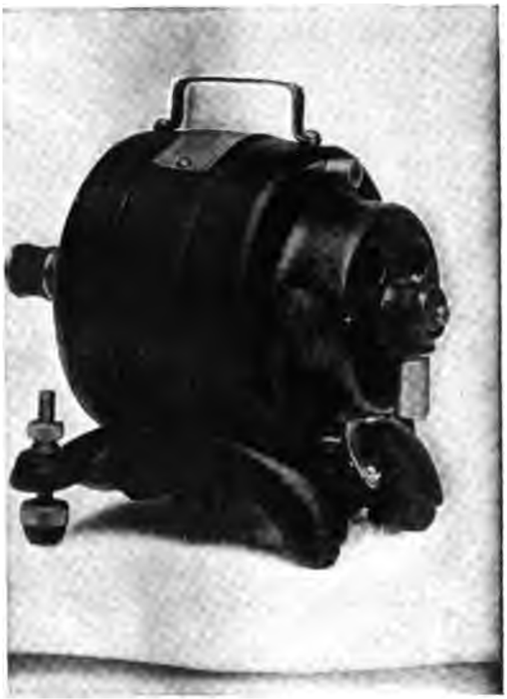

Fig. 4 H. G. PEARCE

Fig. 3 H. G. PEARCE

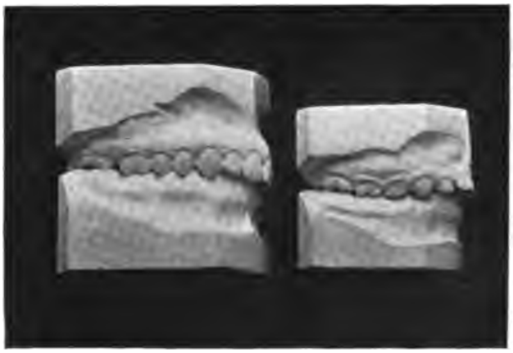

Fig. 5 H. G. PEARCE

In all the photographs I have made for reproductions, the one object in my mind has been to do away with retouching and, consequently, much of my time is spent in arranging the objects and obtaining the desired lighting effects before making the exposure. All this preparation sometimes takes as much as an hour, but I consider myself well repaid if the resulting negative and print are satisfactory. I have found, many times, that my prints are accepted where others have been turned down.

Cuts for advertising are not supposed to be "artistic," in a sense, but they should show the object as it is, bringing out all its qualities and good points. Shadows often cover up a good many of them, so it is often necessary to do away with shadows. Reflections are unsightly if they are too strong. Redundant highlights in the wrong places spoil the effect. Lettering, if there is any, should be brought out as it is in the original. There are innumerable things that can spoil an advertising picture if they are not taken into consideration either before or after making the exposure.

The cuts used to illustrate this article are from prints made from negatives on which there has been no retouching or hand work of any kind. Figs. 1 and 2 illustrate the attempt to do away with all shadows, keeping the white background and having the highlights show in their correct positions. Plenty of detail is shown, which is always essential in such pictures. Fig. 3 shows an unsightly background that would have to be retouched out either by opaquing the negative around the object or by blocking out on the print. Opaquing on the negative is hard to do and if it is not done very carefully it breaks the edges of the object. On the mirror in this picture reflections have been done away with by using a red metal polish paste instead of putty, which is often used for that purpose. By using red paste I have been able to show the curved surface that this mirror has, a little more paste being used at the upper edge, to increase the effect. When this article is photographed flat, by using the reflector, a perfectly white background can be obtained, so that no hand work need be done and the half tone negative may be made direct from the print. Fig. 4 shows the result of using reflectors on a bulky object. There is very little shadow here. In many cases it is not desirable to do away with shadows entirely. Fig. 5 shows white objects against a dark background. The whites are not chalky. Heavy shadows have been done away with and there is detail and texture in the plaster of Paris. The objects were placed on a shelf with red felt for the background and the clear black is obtained by getting an even lighting which breaks the shadows in corners and ridges in the background felt. In Fig. 6 a cross lighting was used to bring out the texture in the cloth and a front lighting to show the lettering in the titles. This was all done by means of reflectors. The shadows on the background are eliminated by means of reflectors.

Although these cuts do not cover a very large field, they bring out the point I want to make, that care and time spent in arranging and lighting an object before making the exposure will do away with the necessity for a lot of subsequent hand work on the print.

In photographing glassware, I usually rub red paste over the outside and, if it is a hollow vessel, I fill it with a dark fluid. This gives perfect results. For jewelry and silverware I also use the red paste to break reflections and I use a grey background, eliminating cast shadows by means of reflectors. Stoves are often difficult to photograph successfully on account of the extreme contrast between the black parts and the polished nickel. I use putty on the bright parts and if there are letters in the nickel I usually cover the letters with stove black. On letters on the black parts of the stove I use a little gray water paint. Then, when the reflectors are arranged correctly, I am all ready to make the exposure.

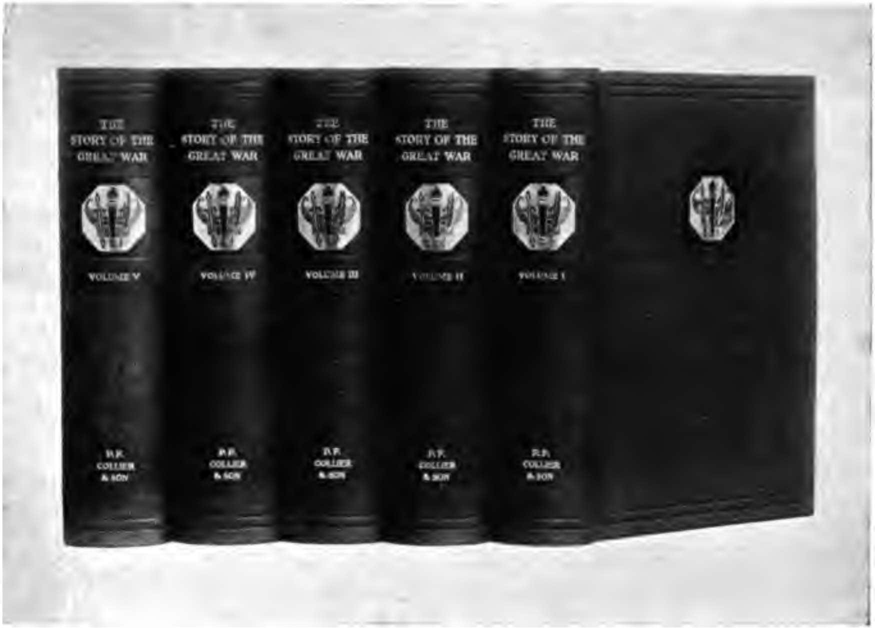

Fig. 6 H. G. PEARCE

Furniture is difficult to photograph properly and it always calls for orthochromatic or panchromatic plates and suitable ray filters. This I will deal with at a later date as there is not room here to say what I would like to say regarding this particular branch of commercial work.

As to my apparatus for gaining the results I desire, I use an easel with a shelf, a square cage covered with draughtsman's tracing linen, two 12″ square mirrors and white blotting paper. For backgrounds I use red felt, white paper and gray cardboard mounts. I fasten the cage to the easel and this acts as a diffusing box. I then place the object to be photographed on the easel shelf with the necessary background in place and focus the image, making it the required size on the ground glass screen of the camera, which is an 8 x 10 Eastman View. Then I place the reflectors, trying them in different positions until I get the desired lighting. If I find I cannot break the shadows with the white blotting paper, I bring the mirrors into use and reflect the light from the window through the tracing linen. If I want the light from above the object, I reflect light to a piece of white blotting paper placed above the object. When I get things arranged so that everything looks to be as I want it, I go back to the camera and study the image on the ground glass. Sometimes I find it necessary to make a few changes, if not, I go ahead and make the exposure.

All this preparation takes considerable time, but I believe it is time well spent, for it saves a lot of work afterwards both on the negative and on the print.

I always try to give a full exposure and I always use pyro to develop the negatives, as I find it gives great softness and excellent printing quality. I use the following formula:—

1	Pyro	1 oz.
	Water	16 oz.
	Oxalic acid	10 grains

2 Sodium sulphite in 16 oz. water to hydrometer test 60.
3 Sodium carbonate in 16 oz. water to hydrometer test 50.

To develop, take 1 ounce of each and add 4 to 6 oz. water .

I vary the carbonate according to the nature of the object photographed and according to the exposure.

If I find I have a negative that is defective in any way, it goes to the waste pile. I never try to patch up a defective negative or try to force an imperfect print on a customer. In my estimation a defective negative is as useless as a broken one. It does not pay to try to pass bad prints. I always do the work over again from the beginning.

I have found that the best plate to use for commercial work is a double coated orthonon, my choice being the Standard Orthonon plate. I very seldom have to dodge in printing, as my negatives run pretty even in contrast on account of the time I spend in arranging and lighting the subject before exposure. I always use glossy printing paper and add a little more bromide to the developer than is called for in the formula. A print of a tone tending toward green rather than blue makes a better reproduction, although the blue-black is more pleasing to the eye.

SOME THOUGHTS ON ARTISTIC ANATOMY

MERVYN THOMPSON

IT IS not an easy task to reconcile two subjects so far apart in the minds of most readers as anatomy and the fine arts; but if prejudices, early imbibed, be thrown off, it will be found that there is no science, taken in a comprehensive sense, more fruitful of instruction, or leading to more interesting subjects of enquiry than the knowledge of the animal body."—Sir Charles Bell, K.H.

It may be asked, what may the artist gain by the study of anatomy? A more direct question applicable to readers of this journal is—what may the photographer gain by that same study?

"Anatomy may be defined as the examination of that structure by which the mind expresses emotion and through which the emotions are controlled and modified; it introduces us to the knowledge of the relations and mutual influences which exist between the mind and the body."

To the artist, therefore, the study is of considerable importance. The photographer who is at the same time an artist, as making a distinction from those who practice photography in a more commercial sense, seeks to use photographic processes as a means of artistic expression.

In the early days of Fox Talbot's calotype, a successful painter, David Octavius Hill, took up photography as a quick means for making a large number of portrait sketches for a great group. Unfettered by photographic convention and guided by an artist's knowledge and tastes, he produced portraits which for pictorial quality have perhaps never been surpassed.

The artist and the photographer are akin. While the one seeks to achieve results by natural genius and trained dexterity in the manipulation of paints and brushes, the other, having the same aims and objects, accomplishes them by the aid of photographic processes. The very imperfections of some of these processes make it imperative for the photographer to acquire practice in the use of paints and brushes, in order to eliminate or correct those inexactitudes of form and tone.

SPANISH LADY HOLMES I. METTEE

Honorable Mention, Second Annual Competition

A very large number of retouchers work from a mental picture of a standard face and talk vaguely of modeling and expression, without the least knowledge of the construction of the human face or the muscles controlling and responsible for the interpretation of human emotions.

Many operators, too, work in a manner that may be best described as haphazard. How many portraits one sees with a bad perspective, an ugly hand or arm, rendered out of proportion by an ugly pose, the choice of a wrong view-point or a lens of unsuitable focal length? Given a responsive sitter, an operator producing a negative with such an imperfection is guilty of wasting a plate, and nothing more. Had he or she acquired a knowledge of anatomy, the probability is the fault would have been observed and corrected before the exposure was made.

The study of anatomy does not teach one to use pencil and brush, or does it help one to acquire knowledge and practice in the application of photographic processes; but it teaches one to observe nature, to see forms in their minutest variety which, but for the knowledge of certain elementary principles, would pass unnoticed.

It may be possible to acquire good taste by familiarity with standard works of art, and by association and conversation with those who have already acquired the power of execution, which, should one desire to achieve oneself, will be found to depend upon much deeper sources of knowledge as well as natural genius.

The artist by a study of nature acquires a true knowledge, in contradistinction to those who adopt a standard based upon some of the finest works of antiquity, because many of these works are best regarded as models of perfection and are probably unlike what has existed in nature.

The photographer, be he operator or retoucher, can scarcely call his education complete or be competent for the finest work, without some real knowledge of the form, construction and proportions of the human body.

Apart from the proportions of the body the all-important question of expression, the source of expression and the reason for it, is a study that should be considered essential in the photographer's training.

Expression is of even more consequence than form; it will light up features otherwise heavy, and give charm to a face that may otherwise be considered ordinary.

The operator, by the skilled use of his apparatus, has the means whereby to produce a portrait of his sitter. How is it possible for him consistently to achieve perfection, unless he has the ability to make accurate observation of nature's slightest characteristics?

The retoucher, applying his skill to the correction of photographic imperfections, of lighting, etc., has a difficult task rendered more difficult still by having only a negative and not a positive image to work upon. It is hardly conceivable that the highest standard can be reached without an intimate knowledge of the structural complexities of the human countenance!

What then are these characteristics and complexities? Can we define them? We know that the eye is one of the chief features of expression. A study of anatomy teaches us that no less than three muscles co-operate in the opening and closing of the lids. Of the facial muscles of expression, there are four attached to the eyebrow, four more move the cartilages of the nostrils, while there are no less than twelve muscles of the lips and cheeks, all powerful agents in expression. Then there are the muscles of the forehead.

There have to be considered the effect of emotion, the changes that occur in the human structure from infancy to adolescence and thence to maturity and age; the infinite variety of feature, stature, coloring and expression, the characteristics peculiar to types and nationalities, and many problems of philosophy and physiognomy.

A retoucher working upon the head of an aged man must know what is the natural result of age, what of deformity: or to embrace generalities, what of thought, of refinement, of surprise, of irritation, of sensuality, of nobleness and grace, of mirth and sorrow. Without such knowledge it were surely a presumption to attempt the work at all!

It has been said that anatomy is not to be displayed, but its true use is to beget an accurate observation of nature in those slightest characteristics which escape a less learned eye, that anatomy is the true basis of the arts of design, and that it will infallibly lead those to perfection who, favored with genius, can combine truth and simplicity with the higher graces and charms of art.

Sir Charles Bell, in his "Anatomy and Philosophy of Expression," says: "By anatomy in its relation to the arts of design, I understand not merely the study of the individual and dissected muscles of the face, or body, or limbs, — but the observation of all the characteristic varieties which distinguish the frame of the body or countenance. A knowledge of the peculiarities of infancy, youth, or age; of sickness or robust health; or of the

OLD MILL **KARL SUCHY**

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contrasts between manly and muscular strength and feminine delicacy; or of the appearances which pain or death present, belongs to its province as much as the study of the muscles of the face when affected in emotion. Viewed in this comprehensive light, anatomy forms a science, not only of great interest but one which will be sure to give the artist a true spirit of observation, teach him to distinguish what is essential to just expression, and direct his attention to appearances on which the effect and force, as well as delicacy of his delineations, will be found to depend."

To acquire a knowledge of artistic anatomy is surely within the reach of everyone; art classes are held in almost every provincial town and the libraries are open for the perusal of all.

"Photography is a worthy profession," the dignity and status of which should be upheld and elevated. Progress both individually and collectively can only be achieved along the paths of evolution, which interpreted can be expressed as — the groping after and acquiring of knowledge.

To those interested in the subject, the value of which is only touched on in this article, the following works are commended:

"Anatomy and Philosophy of Expression," by Sir Charles Bell, K. H.; "Anatomy for Art Students," by A. Thompson; "Surface Anatomy," by B. Windle and Manners Smith; "Landmarks and Surface Markings of the Human Body," by L. B. Rawlings; "Surface Anatomy," by T. G. Moorhead.

A B C OF PHOTOGRAPHIC CHEMISTRY

JULIEN J. PROSKAUSER

THE writer has been asked times innumerable: "Why are there no books on the chemistry of photography, and why doesn't American Photography or some other photographic publication take up the subject so that the veriest novice can understand the very basis of his picture-making hobby?" To the answer: "I have seen dozens of articles in American Photography along those lines," there almost invariably comes the reply: "They are too deep for me." Therefore, in the following brief outline of the foundation of photographic chemistry, the writer attempts to give, concretely, the "A B C of Photographic Chemistry."

Before starting, however, he would call the reader's attention to the "Handbook Series" published by the American Photographic Publishing Co., in which will be found a book on elementary chemistry entitled "Chemistry for Photographers," and also to "Elementary Photographic Chemistry," published by the Eastman Kodak Company. Now to our subject.

On the compounds of silver with chlorine, bromide or iodine, and their affinity to light, rest almost all the photographic processes. A film, plate, or printing paper is simply a base for a sensitive emulsion made so as to hold silver bromide or silver chloride. The sentence above was worded so that the reader may visualize something tangible on his film, plate or paper base.

In making a film, gelatine is used as the base to hold the sensitive silver salts. This gelatine is a very complex substance, made from the bones and skins of animals. The base for a plate is any thin glass, chemically pure, on which the silver bromide emulsion can be flowed. The base for a print is a specially made paper, free from impurities, and either a silver chloride compound (in daylight or printing-out paper) or a silver bromide (bromide or developing-out) is placed on it.

Any exposure of the film, plate or paper which has been coated with a silver emulsion which is said to be "sensitive to light," produces a change in this emulsion. But, as this change is not visible, to discover what it is we have to place the exposed emulsion in a developer. This developer takes the bromide away from the silver, and leaves this behind in the form of a black "image." This image is formed of metallic silver. This change is called in chemistry a "reduction." The reduction of bromide of silver to metallic silver is therefore the story of the photographic art.

The result of the reduction tells the story of the picture-to-be. If the silver compound was not exposed to the light long enough when the exposure was made in the camera, and development is carried on for the normal time, the negative is what is termed "thin." By thin is understood that not enough metallic silver was deposited in the development or reduction of the silver salts, to form an image which is printable. When the silver compound was overexposed in the camera, after normal development we have a "dense" negative. We understand dense to mean that so much silver bromide was reduced to metallic silver that the image is hardly translucent.

The developers in everyday use are metol (elon), pyro and hydrochinon. Metol is a paramidophenol base which is treated with methyl alcohol, which treatment produces methyl-paramidophenol, as the methyl attaches itself to the base. Elon is the trade name

THE FORTUNE TELLER CHARLES H. KRAGH

Honorable Mention, Second Annual Competition

of mono-methyl-paramidophenol, which some believe to be better than the ordinarily marketed metol. Pyro is an abbreviation for pyrogallic acid and is made from gall nuts imported from China. It is sold in two forms, a flaky powder and a crystal. The writer always uses pyro in crystal form, because experience has taught him that the powder is so light that tiny particles of it settled all over his darkroom whenever the box was opened. Crystal pyro does away with this.

Hydrochinon is derived from benzol which has been converted into aniline, and afterwards oxidized to get the hydrochinon. It is rarely used alone, but when used with elon gives remarkable density to plates, films or papers. One of the present day uses of an elon-hydrochinon formula is in the development of X-ray plates or films.

Now we have the emulsion explained and also its reduction. In the last three paragraphs we have named the principal developers which do the reducing. But, as no developer will reduce alone, because it must be in an alkaline solution, we have to go to the next stage of the chemistry of photography.

To develop, or reduce, with any of the three developers named above, we add certain chemicals necessary to dissolve the developer in an alkaline solution. Developers of high developing or reducing power, such as pyro or elon need only an alkaline carbonate, while hydrochinon, which may of course be used with them, develops with greatest energy when a caustic alkali is used. In "Les-Lite," a developer made up by the writer and recently discussed in AMERICAN PHOTOGRAPHY, the remarkable energy of the solution was due to an excess of caustic soda.

Ammonia, a very powerful alkali, was used with pyro in the early days of dry plate photography, but has been discontinued in recent years. The principal sodas added to all developers to make them alkaline for use are sodium carbonate and sodium sulphite.

The sodium carbonate is the alkali and the sodium sulphite is the preservative. When developers are in alkaline solution, they have a great affinity for oxygen. To keep the developer in solution and to prevent its oxidation by the air, the sodium sulphite is added. With pyro, the value of sulphite is most readily seen. Pyro, when oxidized, is yellow in color and if we developed a film in pyro and carbonate solution alone, the resultant negative would be very yellow because the image would consist, after development, partly of oxidized pyro and partly of metallic silver. When sulphite is added, the negative, while still slightly yellow after drying, will be better for printing. When a great deal of sulphite is added to pyro, the resultant negative is almost like an elon-developed negative in color.

Thus we have the chemistry of emulsion and developer. Now we come to the chemistry of fixation, or the final step, chemically, in negative or print making. There remains in the paper or the film or plate, after development or reducing, some undeveloped bromide. To preserve the plate and make it insensitive to light, this silver bromide must be dissolved. The chemical universally used for this final step is called "hypo," an abbreviation for hyposulphite of soda. This is an old name, and modern chemists call it sodium thiosulphate. The textbooks say that this is made by boiling together sodium sulphite and sulphur, the latter combining with the former, but, according to the Eastman Research Laboratory, hypo is now usually made from calcium sulphite residues, calcium thiosulphate being first made by the above process and then converted into the scdium salt by treatment with sodium sulphate.

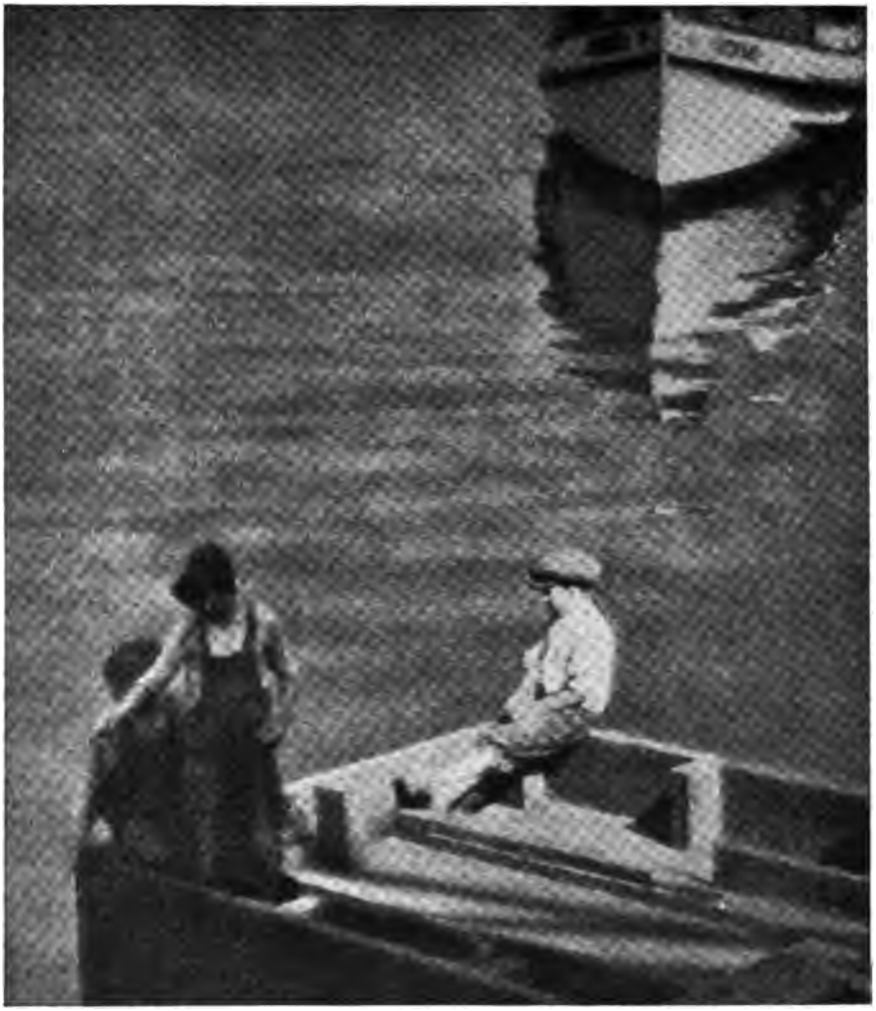
After the negative or print has been developed and rinsed, it is placed in the hypo bath until all of the silver bromide is dissolved. It is easy to tell when the silver is gone for, after development, the undeveloped bromide of the emulsion is still yellow. It might be more explicit to explain that this yellow is visible from the non-emulsion side more readily than from the film side, as the black of the metallic silver is usually to be seen on the emulsion side.

Fixation of the emulsion may be accomplished by the use of hypo alone, but as carelessness in rinsing paper or plates or films before transferring them to the hypo bath means that more or less developer remains on the developed object, it is advisable, in order to prevent the hypo bath from discoloring or oxidizing to add to it, as a preservative against this, sodium sulphite.

If the hypo bath is kept in a slightly acid state it is found that the alkali carried over by the adhering developer is immediately neutralized. Therefore, besides the sodium sulphite, an acid is also used in making up a hypo bath for fixation purposes. Then in warm weather, or even all year 'round, it is well to add a "hardener" to the acid fixing bath for the purpose of preventing the gelatine of the emulsion from becoming soft or swelling.

There are many acids used; some like sulphuric and others citric, but the standard is a 28% solution of acetic acid. Acetic acid is prepared, in its dilute form, as vinegar by the fermentation of alcohol. Commercial acetic acid rarely contains any harmful impurities and the photographer never finds trouble from this scource.

The hardeners used vary. Chrome alum, in spite of its name, contains no aluminum. It is a compound sulphate of potassium or ammonium sulphate with chromium sulphate. Its purity is usually high and it has far greater hardening power than ordinary alum. For-



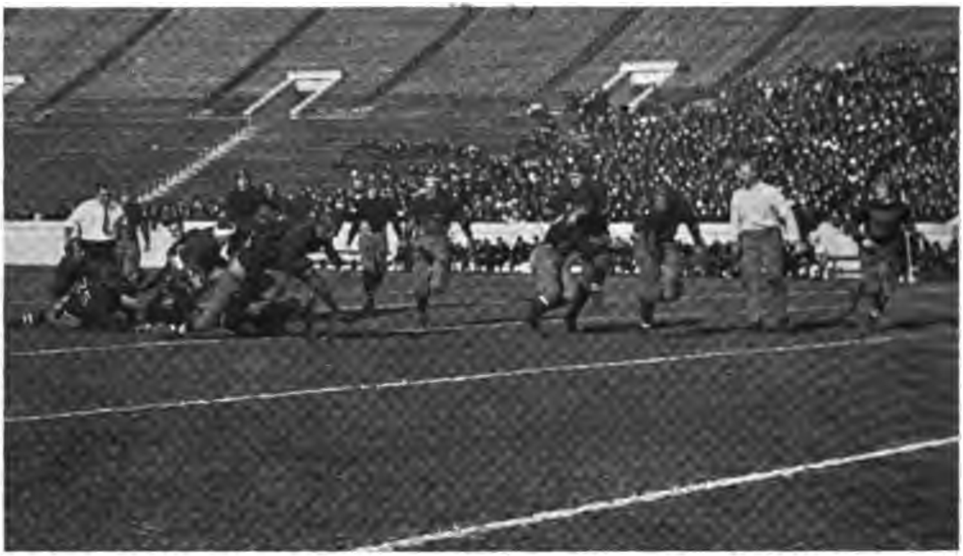
TRUANTS N. P. MOERDYKE

Pittsburgh Salon, 1922

maldehyde is also used as a hardener as a 5% solution when quick prints are to be made. A negative soaked for one minute in a 5% formaldehyde solution, after fixation is completed, may be boiled without the gelatine dissolving.

In making developers always dissolve the preservative first, unless you are using elon or metol. Then dissolve a little sulphite first, then the developing agent and then the rest of the sulphite. Always see that one chemical is *completely* dissolved before adding another. If you don't do this, you may get chemical fog when you develop. In the case of your sodas add the chemical to the water, not the water to the chemical.

In making up your fixing solution, always dissolve the hypo before adding the acid, hardener or sulphite. The best way is to add the sulphite, acid and hardener already dissolved. Never add acid sulphite solutions to a warm hypo bath. If you do the hypo will turn milky.



A MAN'S GAME C. B. WEED

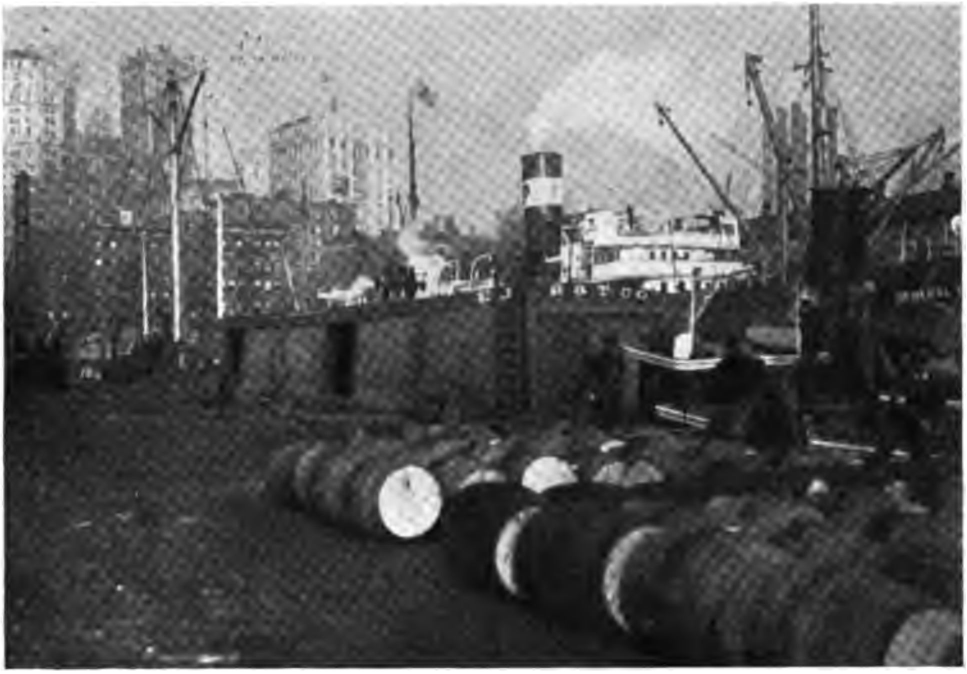
A MAN'S GAME

For such pictures as this other qualities besides photographic skill are needed. The photographer must be agile and energetic, so that he can follow the game and be in the right place at the right time; he must know the game so that he can tell what is likely to happen under certain conditions; he must be able to work fast and must always be prepared for the unexpected and, above all, he must cultivate the almost uncanny instinct of the experienced speed photographer to expose just a shade ahead of time so that he can get the maximum suggestion of action. Technical problems as to suitable apparatus, kind of plates or films, can be solved only by practical experience, as different people have different ideas as to these things, and there is plenty of choice in the matter. Some like to use films; some think plates are more rapid and will not use anything else. There is plenty of action in Mr. Weed's picture and he was very fortunate in being ready to make his exposure at an opportune time. Anyone who is familiar with the game can easily anticipate what is likely to happen, if—. Made with a Graflex camera, 3¼ x 4¼, Cooke Series 2 lens of 5 inches' focal length, used at *f*:6.3, good light at 3.30 P.M. in October, exposure 1-350th second, Hammer Red Label plate developed with pyro-soda in a tank, enlarged on Artura Carbon Black.

CONCERNING SECOND-HAND APPARATUS

With most of the old photographers, amateur as well as professional, there was a kind of sentimental regard for any piece of apparatus which had done them good service, and they would no more have dreamed of sending one of their old cameras or lenses to the auction-room or second-hand dealer than the fox-hunter would doom his favorite mount to the shafts of a "four-wheeler." This feeling is now, however, in a fair way to become extinct. Improvements and modifications succeed each other so rapidly that the progressive worker has hardly time to become attached to a piece of apparatus before it is more or less out of date and has to be superseded. A glance at our advertising columns will show on what an extensive scale this changing of apparatus goes on, and a few words of caution and advice may be acceptable to many of our readers. In the first place, it should be remembered that even the best of apparatus cannot be used for any considerable amount of work without requiring a thorough overhauling, and a would-be purchaser should always make a point of having every article examined by a skilled workman before closing the bargain. As an actual instance of the necessity for this precaution, we recall a case in which a photographer paid a good price for a half-plate focal-plane camera, which he required for press work.

A close scrutiny did not reveal any defect, and a trial plate or two gave satisfactory results; he was quite satisfied — for a short time. At the end of a fortnight some of the slides became leaky, and on submitting them to a camera maker it was found that the light-traps, which were of metal, were so corroded that they were practically crumbling to pieces. These had to be renewed at considerable cost, and again all seemed well. Not long after this the shutter slowed down in an unaccountable manner, and on returning it to the makers it was found necessary to fit a new mainspring, the old one having lost its resiliency, though, temporarily tightened up for the purpose of sale, it appeared to be in good order. Altogether these repairs cost over ten dollars, to say nothing of the loss of time and the inconvenience to the owner. The expert overhauling would have transferred this loss from the buyer to the seller, who probably would have been quite willing to pay for repairs which were proved to be necessary. In the case of lenses by makers of repute, and for which a fair price is asked, it is advisable that they be submitted to their makers for a report on their genuineness, and also their present condition. Most makers will render this service for a very small fee. If the



INDUSTRY G. W. SCHINKEL

purchaser relies upon his own judgment, he should not forget to examine the surfaces to see if the polish is intact. If this is in any way dulled, it will cause a general fogging of the negative, which is more noticeable in bright weather than in dull.

At the risk of being tedious, we must repeat the caution against sending money to strangers who advertise bargains in apparatus either in our own or other columns. Without any intention to be dishonest, the seller is apt to describe his goods in too glowing terms, and the camera "in condition as new" may be found to be well worn, though serviceable. But besides these, there are actual swindlers who have no goods to send, and the hardly less reprehensible ones who have "just sold" the article advertised, and send as near a substitute as possible. To recover a remittance from these gentry is, in the words of the proverb, "like getting butter out of a dog's mouth." However, anyone who is defrauded in this way has no claim for sympathy, as all reputable journals with "apparatus for sale" columns arrange to hold money on deposit until the goods have been accepted as satisfactory. In the case of photographers, the ordinary references to their stock dealers may be exchanged, and some such precaution should always be taken. — *British Journal of Photography.*

INDUSTRY

It is hard to make a picture of such a subject as is shown in "Industry" and make it really satisfying from the artistic point of view, because there are so many different things that are all equally interesting, and there is no definite dominating point of interest. We have to do what we can to make some one thing more prominent than anything else, so that it will act as a point of focus for the eye and we can do it by position or isolation in the picture space, by contrasts in tone, or by any other means that may be expedient. In Mr. Schinkel's picture, for example, one thing that might be done to provide unity of interest would be to print a good deal darker, so that all the scene is lowered in tone, and thus the steam from the funnel of the steamship would stand out as a prominent accent against the sky. This would tend to make it a picture rather than a record of an interesting scene and this is something like the sort of thing an artist would do if he were painting the scene; some one thing would attract his attention and in the picture he would emphasize this one thing and subdue everything else. It is in a case like this that one of the hand-controlled processes is useful, so that parts of the picture, such as barrel heads, etc. can be darkened and the contrasts of tone in the prominent object intensified. "Industry" was made in New York City with a 2¼ x 3¼ Ansco camera fitted with an Ansco anastigmat lens of 3½ inches' focal length, used at *f*:6.3, faint sun, 10 A. M. in November, exposure 1-25th second, enlargement on Artura Carbon Black.

DIRECT POSITIVES ON BROMIDE PAPER

For rapidly copying documents, articles in journals, line drawings, etc. ,a direct photograph on bromide paper is very satisfactory if the photograph is made through a prism to avoid reversal. A well-known example is the use of the Photostat machine, in which the operations of development and fixing are performed automatically after exposure in the camera, the paper being cut off from a roll, so that a great number of photographs can be taken in succession. This method, of course, produces a nega-

HALF WAY 'TWIXT HINDRANCE AND HELP
LOUIS A. DYAR

tive, and for much work a negative has no disadvantages. On most occasions, however, a direct positive is desirable, and such positives can be obtained on the bromide papers used for copying work, by two different processes.

The first method is the well-known one whereby the developed, but unfixed, print is bleached out in an acid permanganate bath, and the residual image of silver bromide exposed to light. This, on development, gives a positive black-and-white image. Good results are obtained by observing the following:

The exposure must be sufficient, so that development is complete in about two minutes, using the developer recommended for the particular paper used. After washing the print for five minutes it must be bleached by bathing for one minute in the following bleach bath:

Potassium permanganate	30 gr.
Sulphuric acid (strong)	150 min.
Water	32 oz.

Rinse and immerse in a dilute solution of sodium bisulphite to remove the brown stain, working in full daylight, and rinse and develop in the developer first used; then fix and wash in the usual way.

Any brown stain that remains in the print can be removed by bathing in a weak solution of potassium cyanide, being careful to take the print out the moment the stain disappears, or the silver image itself may be attacked.

A second method, worked out in the research laboratory of the Eastman Kodak Company, calls for developing in the usual manner, converting the unexposed silver bromide into silver sulphide and then removing the residual silver image, leaving a ositive image of silver sulphide.

The exposure may be made in an ordinary plate holder, keeping the paper flat with a sheet of clear glass, and must be adjusted so that development is complete in two or three minutes in the following developer at 70 degrees F.:

Elon	8 gr.
Hydrochinon	150 gr.
Sodium sulphite	3 oz. 100 gr.
Sodium carbonate	3 oz. 100 gr.
Potassium bromide	50 gr.
Water	32 oz.

This developer will keep well.

It is evident, in view of the fact that this developed silver image is subsequently removed, leaving a clear white background, that all the exposed silver bromide must be reduced to silver during development, or the highlights of the final positive will be stained or fogged. On the other hand, if the print is overexposed in the first place, spreading may take place and fine lines will be lost.

After development a rinse only is needed before the print is put into the darkening bath, where it remains for two minutes at 70° F., when the unexposed silver bromide is converted into sulphide. The bath is made up of:

Sodium sulphide (crystal)	1 oz. 330 gr.
Water	32 oz.

It will be safer to bring this solution to the boiling-point and allow to cool before using, in order to precipitate the iron present. The final color of the print, as well as the degree of contrast, will depend on the strength of this bath, which may be used almost indefinitely. A weaker solution will give yellowish-green tones, but if the above strength of the solution is maintained, almost black lines are obtained. Rubber fingertips should be worn, as the solution may affect the finger nails.

The print, after a few seconds' washing, should be placed in the following bleach bath until the highlights are perfectly clear, which will occur in about three or four minutes:

Potassium ferricyanide	11 oz.
Ammonium sulphocyanide	11 oz.
Water to	32 oz.

The temperature of the bleaching bath is important. It may run from 65° to 75° F., but it should not go beyond this, or the silver image may be attacked and the bath is liable to decompose. The bath ripens with age, and works best when it has turned a greenish color. Ammonium sulphocyanide may be replaced by the potassium salt without changing the action.

In view of the fact that ammonium sulphocyanide dissolves silver bromide, the print is automatically fixed during bleaching. After bleaching, the print should be well washed for five or ten minutes and dried as usual.

The finished print will have a slightly yellowish cast in the highlights, which can only be removed by continued use of the ferricyanide bath, which is not desirable. Local yellow stains are due to the presence of silver bromide along with the silver image previous to sulphiding. It is important, therefore, to prevent this by correct exposure and full development. At all stages of the process the print must be agitated to prevent stains caused by uneven action of the baths.

In actual practice the process takes very much less time than is taken to describe it. Not more than twenty minutes are needed to carry it through, including the developing, sulphiding, bleaching and washing. — *British Journal of Photography.*

HUMPTY DUMPTY SIMON JOCHAMOWITZ

HALF WAY 'TWIXT HINDRANCE AND HELP

Natural, unposed, unarranged snapshots like this one often are of greater value than the most expensive product of a professional studio. When, in addition to naturalness, there are artistic qualities such as interesting composition and good tones, the value is greatly enhanced. Mr. Dyar's children's portraits always are interesting and this one is no exception. We think that about half of the black strip on the left hand side might be trimmed off; there is rather too much of it. Made with a Rexo 3¼ x 4¼ camera, fitted with a Dagor Anastigmat lens of 6.8 inches' focal length, used at U. S. 4, good light at 3 P. M. in January, exposure ½ second, Eastman N. C. Film, developed with Rodinal, printed on Royal Velox from an enlarged negative.

BROMIDE IN THE DEVELOPER

In summer, sometimes it is necessary to use a little bromide in the developer, but it is always a good plan to use it as little as possible or to do without it altogether. Test its action with the plates you are in the habit of using and try to regulate the exposures so that you can dispense with the necessity for using bromide as it has a tendency to clog up the shadows. When a plate is overexposed, remove it quickly from the developer, rinse it and put it into a developer containing bromide. This should be done with as little delay as possible, otherwise the plate will be developed before the bromide can have any effect on it.

HUMPTY DUMPTY

In making still life pictures where the arrangement, lighting and everything are under the control of the photographer, there is very little excuse for technical shortcomings. The picture should be properly focused and the exposure should be approximately correct. Mr. Jochamowitz has selected unusual and interesting playthings for the "toyland" study and has arranged them with considerable pictorial insight, but such things as these should be focused clearly, and if an anastigmat lens is used the picture should exhibit the crisp, sparkling definition that is possible with such a lens. If softness of outline is desired, it is better to get it by the use of a suitable lens than by throwing the image out of focus. It might have been better in this case to have stopped down a little and increased the exposure accordingly. Made in Peru, South America, with a 3¼ a 4¼ Graflex, Bausch and Lomb Tessar lens of 5½ inches focal length, used at f:4.5, bright light at 2 P. M. in January, indoors, exposure 1-5th second, Seed 30 Gilt Edge plate developed with pyro, enlarged on P. M. C. Bromide.

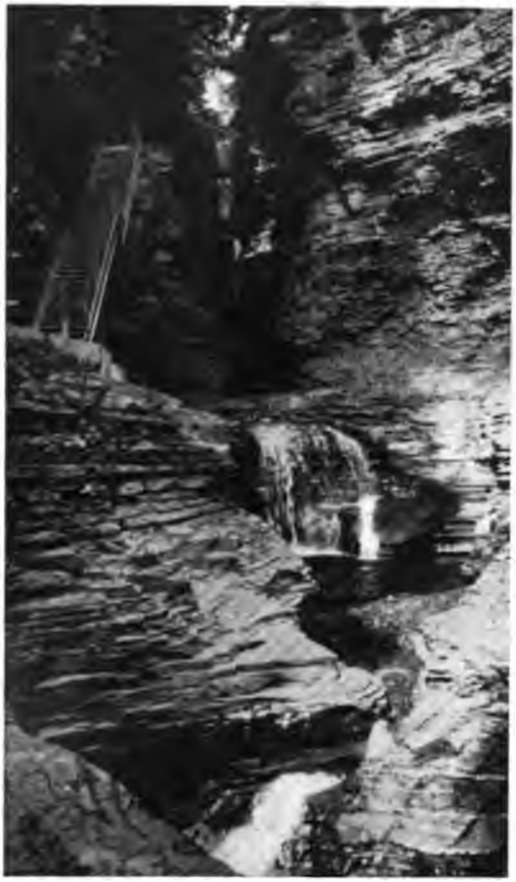
TO REMOVE WRINKLES FROM BACKGROUNDS

Wrinkles from any cause whatever (provided the paint is not cracked off) may be removed and the background made as smooth as though it had been painted on your frame or stretcher.

New backgrounds are often wrinkled by the ignorant while they are being mounted on the frame, by the fingers touching the back or the front of the background when it is being unrolled. Avoid touching the ground and never squeeze or crush it with your fingers; let it rest gently on the open palms of your hands while your assistant tacks the top to the frame, first one end, then the other end, and then working from the center to both ends of the top at the same time. This should be done with the frame standing upright. Never lay the frame on the floor to stretch a background as you will probably ruin it.

After the top is tacked begin on the sides at the bottom and work upward. Do not drive any of the tacks all the way in, you may have to remove them to smooth out any sagging or wrinkles. Then if the background has no extension tack the bottom. All tacks should be about six inches apart.

Wherever any sagging or wrinkles appear, remove the tacks one at a time, stretch the ground gently



WATKINS GLEN JOHN SPRENGART

and replace the tack, working toward the nearest corner. Do this until your ground is as smooth as if painted on your frame. If, however, this is not accomplished by the above, place the background on two or three chairs face down and place a pail of boiling water underneath (keep the water steaming) for an hour, then stand the ground upright and stretch out any sags or wrinkles as before, as the paint will have become softened enough to allow you to do a good job this time. Then drive the tacks all home.

If your ground has an extension, lay a strip of board along the bottom edge and nail through it to the frame to hold the ground until it is thoroughly dry, which will take twenty-four hours, when the strip can be removed. The nail holes will not show in the photo. Have the nails six inches apart — as you did the tacks, or the ground will shrink unevenly.

If you use a background carrier for your grounds, you will have to mount them on frames first and proceed as above. Allow them to dry thoroughly, when they may be removed and remounted on the carrier rollers. The wrinkles will again shortly reappear. Can't fix them.

To remove small indentations, spray the background gently with an atomizer containing water ch has been boiled and allowed to cool. In fact, the atomizer may be substituted for the steam process if you care to take the time necessary to accomplish the result.

Before trying this process on an old ground be sure to dust it thoroughly or it will stain. Brush it vigorously with a soft feather duster until every particle of dust is removed.

To save a background that has been water-stained, if you discover it before it has begun to dry, lay the ground down on the floor and flood it with clean water. Do it quickly and all over, but do not attempt to use a brush or cloth to cover parts you failed to get wet — pour water on them. Then stand it up and allow it to dry. All sides must be tacked as in method for removing wrinkles. This will often save a ground that otherwise would be hopelessly stained. Remember though that nothing will remedy the stains once they are dry at their edges. Paint will not even cover them. I have, in experiment, removed all the paint and repainted stains twenty times by actual count, and the stain came up as strong through the last coat of paint as it was before I touched the ground.

WATKINS GLEN

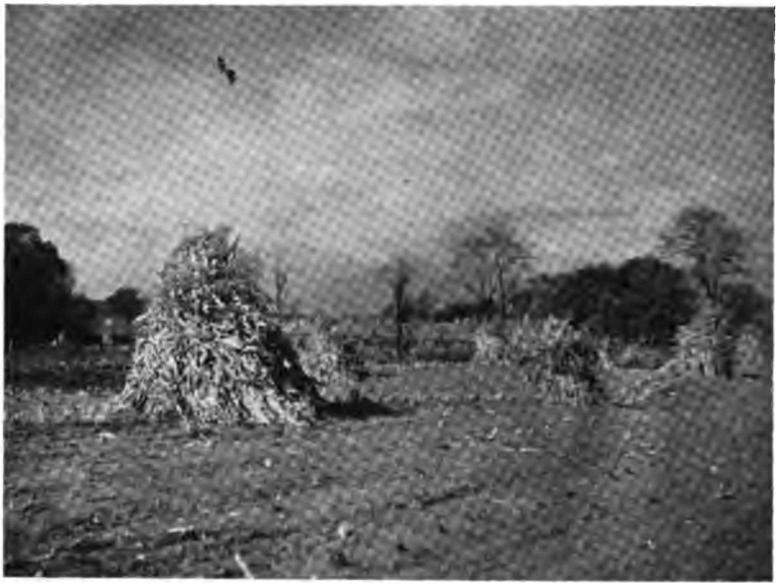
The natural scenery in the famous Watkins Glen in New York State has long been an object of curiosity and interest to innumerable visitors and it is natural that many of them today who carry cameras with them on their sight-seeing trips feel inclined to photograph the curious and diversified rock formations, the beautiful coloring, the numerous graceful waterfalls, and the other natural features which seem so beautiful. It is unfortunate that these beauties of color, especially, are not easily translatable into satisfactory negatives, for the rocks are dark, the gorges deep, and the light poor. The consequence is that the average visitor is much disappointed with his exposures, getting from his finisher, as a rule, only a bunch of very dark prints with an over-accented highlight here and there where the sun has fallen on the rocks or where the light of the sky shines through. The picture we reproduce above shows that the maker has been able to overcome many of these difficulties, for his exposure has been admirable and the print shows full detail everywhere, except in the remotest recesses of the ravine where we would naturally expect to find a few patches of deep shadow.

The composition of an attractive picture in this ravine is rather difficult, for the predominant lines are horizontal and it is difficult to make a harmonious composition from these broken and irregularly arranged strata. The present picture, however, shows lines which lead very nicely from the foreground over the waterfall, up the staircase, to a natural exit in the distant patch of sky.

This was made with an Ansco equipped with an Ilex *f*:7.5 lens of 6¾ inches focus and an Ilex Acme shutter. The exposure at 9.45 A. M. in July was 1-25 second at *f*:7.5, the make of film not being mentioned.

SKY FILTERS

A sky filter is very useful to the man who is not in a position to make an orthochromatic exposure. These filters grade down from a deep orange at the top to perfect transparency at the bottom. The



AFTER THE HARVEST — A. W. CRAWFORD

sky and clouds are much more actinic than the foreground, and they would be grossly overexposed if given an exposure long enough to give good shadow detail in a heavy foreground. The graded filter often will equalize the exposure and give a very excellent negative. It cannot be used if any important foreground object, a tree for example, projects into the sky, otherwise part of the tree or whatever it is would be badly underexposued, but on an open landscape where the upper part of the picture is nothing but the unobstructed sky a filter of this description often is of great assistance in equalizing the exposure.

AFTER THE HARVEST

It seems hard to understand how it was possible for photographers to put up with the faulty tone rendering of the old color-blind emulsion for so long after a remedy for this had been discovered. The use of orthochromatic plates and color filters for landscape pictures was thought to be quite unnecessary by many of the old workers, because a clear, white-paper sky had become so familiar that it was regarded by many as being correct. The moods of nature depend very much for their representation on suitable rendering of sky tones; a perfectly blank, white sky does not suggest sunlight as convincingly as a sky in which we see white cumulus clouds distinctly differentiated in tone from the blue of the sky between them. The sky can be luminous without being white, and a serious landscape worker at the present time would seldom attempt to make exposures except through a ray-filter.

It is the sky that makes Mr. Crawford's picture, "After the Harvest," so attractive. The tones throughout are so well rendered that they strongly suggest the actual colors of nature. The composition is simple but very pleasing, and the picture, though unambitious, is entirely successful. Made with a Conley camera, 4 x 5, R. R. lens of 6¼ inches' focal length, used at *f*:11, good light at 11 A. M. in October, three-times filter, exposure one-fifth second, Hammer Ortho plate, developed with metol-hydrochinon, print on Normal Cyko.

A FEW RULES I HAVE FOUND GOOD TO FOLLOW

Making Sittings of Children. Use plenty of light: do not be afraid of using too much, for the more you use the better the negatives will be. Bear in mind that more light means greater softness and roundness. The light should fall from the front, both side and top. Children's faces do not show any character, so that the light may be as strong as wanted without destroying the likeness. Another great advantage in using a large source of light is, of course, to be had in making the sittings quickly. I make all children's pictures in snapshot work. This may seem bad policy to the one who believes in the long exposures, but, as stated above, I have not found that it destroys any of the character, and inasmuch as I get a fully timed negative by using a large source of light, the negatives show plenty of strength. Also, I use, as a rule, light grounds for children's pictures. I have always associated the lives of the little ones with light and sunshine. Make their pictures show it. A child is all out of place when shown in a picture as though he were sitting in a dark room. Children do not like night or dark rooms, but they do like sunshine and plenty of it. It is their nature, and why not show them that way?

Old People. Of all the subjects that come to the studio, I would rather photograph the old folks than any. Every face means something, and every line in the face means some trial overcome, some story that we all could profit by if it were not for the fact that we all have to learn by actual experience. For such subjects I use the light from a lower source, working it more from the side and rather farther to the rear of the subject than usual. Do not try to fill every line and wrinkle with light, thinking it will better the picture. It makes it weak in character. A better plan is to use the lens open — that is, without a diaphragm — and focus well up on the end of the nose, so that the face may be in a soft, delicate diffusion. Far be it from my intention to recommend the fuzzy, woolly type stuff that is often seen, but a soft, diffused focus gives to the old face the softness of age without destroying character and without exaggerating the lines, as is often done, both intentionally and unintentionally. Some operators seem to think character expresses more than delicate handling of the lines.

White Draperies. Pose the subject close up to the light and use a very small opening; in fact, some of the very best things I ever made were by an opening no larger than a window. This allows the operator to concentrate the light directly on the face of his subject, and the drapery is thrown down in a lower tone by reason of the light being too small to spread all over the entire figure in even strength. Also, the figure should be turned a trifle from the light if perfect detail is to be secured. By having the figure turned from the light it throws the front of the figure in shadow, and the shadow, of course, holds back the details and thus prevents the drapery from developing ahead of the face to such an extent that the detail would be lost in it.

Dark Draperies. Use light falling from the front, and have the top light a little in excess of the side light and the figure facing more to the light. Better detail is the result and less screening is needed. Be sure to time for the deepest shadow in the drapery if it is to show the detail. One cannot get the detail if the exposure has been too short. The face must be toned down so that there is an even blending of the lights into the shadows, for if this is not done the lighting will be harsh, and the face will stand out like marble while the drapery will look more like a charcoal drawing.

Hollow Eyes. The light must fall from the front and low down. This means that the operator must use his light low enough on the side so that it can get into the eyes. Bear in mind that light does not bend out of its course, and if it is falling from above the subject it cannot bend out past the brow and then turn back again to get into the eyes. The operator must so arrange his curtains that the light is directed into the eyes, and it will be found that when this is done it will be from a lower point than he is in the habit of working the light. The little catchlight that should appear in the eyes can only be gotten by the use of a light that is low enough to fall across the nose just at its root, so that really the light passes between the two eyebrows, over the top of the one on the light side and under the one on the shadow side, and thence into the shadow eye, and the catchlight is the result.

Long Neck. Turn the subject's body a trifle from the light and the face back to the light and lower his head. By so doing the chin comes down toward the shoulder nearer to the camera and the line of the neck is visibly shortened. At the same time the camera should be raised above the subject's nose, so that it really looks down on the chin.

Long Nose. Raise the subject's head and lower the camera, so that it comes under the nose and allows the nostrils to show from the lens.

Short Nose. Raise the camera and lower the subject's head, so that the nostrils can barely be seen.

Long Face. Use front light and rather diffused. Take a three-quarter view of his face, unless he has a hollow cheek, when it is a good plan to allow the ear to just fill the hollow of the cheek on the shadow side of the face.

Short Neck and Round Face. Have the subject stand, even though a bust negative is to be made. This allows the shoulders to fall lower and the weight of the body is pulled downward, so that all features and members are elongated. Make almost a profile and use very strong light from the side and no reflected light on the shadow side of the face. Remember that contrast gives a lengthening effect to a round face. One reason the moon is said to be full is because there is no shadow on it, and the result is that it is perfectly round. The same is true of the one with a short neck and round face.

Bride and Groom. The bride should be posed on the light side of the picture — that is, on the side next the light. This is done so that a small opaque screen can be brought close up to her and screen down the drapery, so as to show the detail in the whites. At the same time, the groom being farther from the screen than the bride, the light falls over the top of it on his black clothes and thus gets the detail in the blacks.

Hands. Be careful to allow just a trifle of the cuff to show in the man's picture, for it makes the hands appear smaller than anything else can do. Also, as a rule, the hands should be posed somewhat to the side, so as to appear smaller, and should not be placed directly under the face nor in line with the face. They should be screened somewhat, so as not to be lighter than the face.

Blondes. Use a low key of light, so as to get all of the strength possible. As a rule, the blonde appears to be lacking in strength in the picture unless so handled. Some shadow effect is good, but do not make the mistake of making a contrast lighting, thinking it is a very low key. A low-keyed lighting should have just as much softness as the high key. Soft, delicate detail should be seen all through the entire lighting.

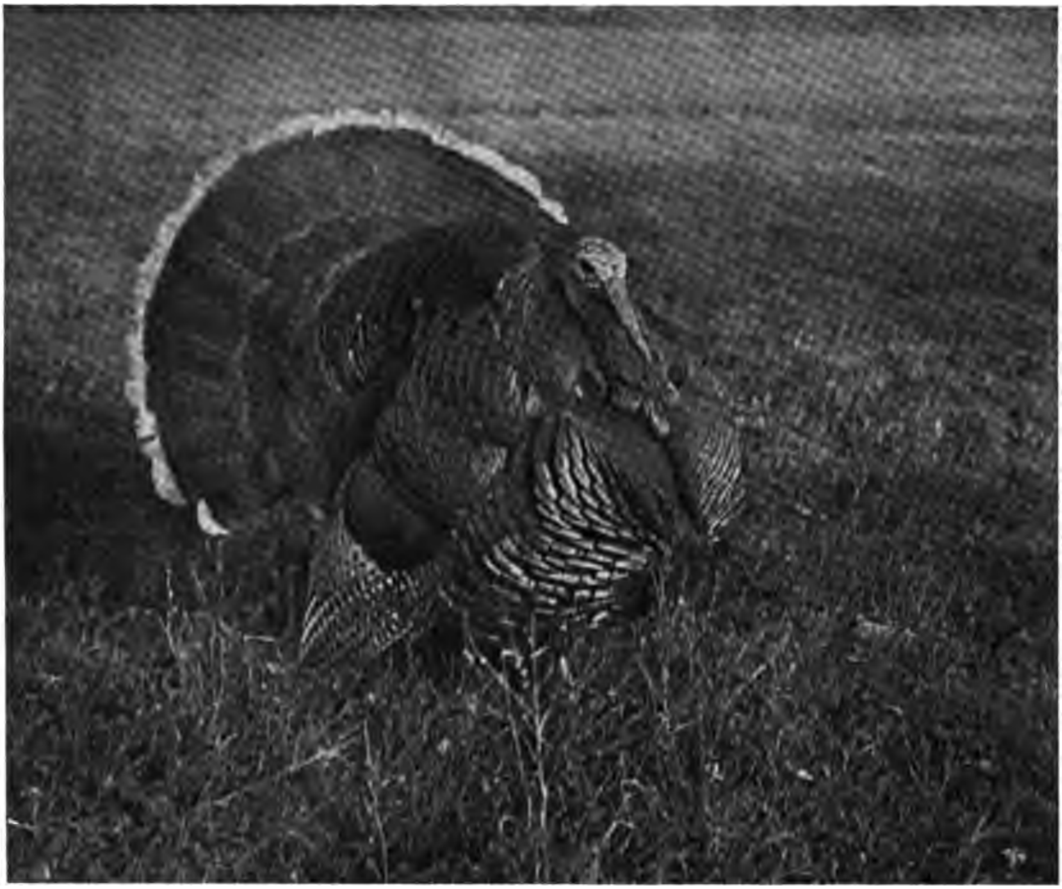
Brunettes. A higher key of light, and the face so toned down that it is brought in closer touch with the hair. The hair, being black, will lack detail if the face is not toned down so that the exposure can be given long enough to get the details in the hair.

Glossy Flesh. Where the flesh is moist it makes the high-lights stand up too strong, and the result is a harsh lighting. If a powder puff is passed lightly over them with just a suspicion of powder on it, it will kill the gloss and the lighting will be more even and show better detail in the highlights.

Dry Flesh. Sometimes the flesh is so dry and uniform in tone that the results shows the face to be flat, with no half-tones. If the operator will have handy a small vial of oil, which has been scented up with lavender water, and just touch his finger to the mouth of the bottle, getting the smallest bit of oil on it, and then touch the flesh where the highlights should appear, he will get much better roundness. Too much oil will give a harsh effect. The lavender water is to make the oil have a better scent.

Staring Eyes. Light the subject in a very low key of light, so that an exposure of several seconds has to be given and then have the subject wink the eyes several times while the exposure is being made. The winking of the eyes does away with the stare.

Sleepy Eyes. Have the subject lighted in a low key of light, so that several seconds' exposure has to be given, and then have him look directly at the center of a large black background or black cloth.



THOUGHTS OF THANKSGIVING EDWIN A. ROBERTS

The eyes will expand somewhat and the expression is much better and more animated.

Crooked Nose. Show the side of the face that has the hump of the nose. Do not photograph into the hollow of the nose, as that makes it appear worse. Use broad lighting, falling from the top and front, making the shadows fall more downward.

Mouth That is Lower at One Corner Than the Other. Pose the subject so that the head may be tilted toward the side that is higher. This lowers the corner that is higher and raises the lower corner, and the mouth is made to appear straight. By "tilting" the head I do not mean to *turn* the head, as that is quite different. I mean to tilt the top of the head to one shoulder or the other, whichever is needed.

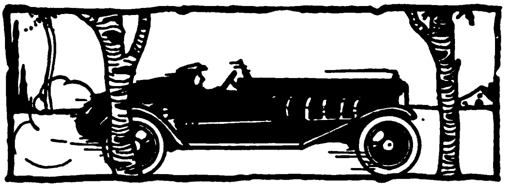
High Cheek Bones. Use front light, from top and side, and make a front view of the face. The light should be soft and the shadows full of detail. — FELIX RAYMER, in *Trade News.*

CHROME ALUM FIXING BATH FOR COLOR SENSITIVE PLATES

Chrome alum fixing baths have advantages that are rarely mentioned in connection with very rapid plates or color sensitive plates. One of these advantages is that the solution is green in color and is almost opaque in thick layers. This permits of the darkroom light being turned up as soon as the plates are under the surface of the fixing bath. With this bath, as with others, there is a limit to the time that it should be used. When a hypo bath has fixed a lot of plates, it becomes loaded with silver and, while it may still render the film transparent, it does not always follow that the silver compounds in the film will wash out readily.

THOUGHTS OF THANKSGIVING

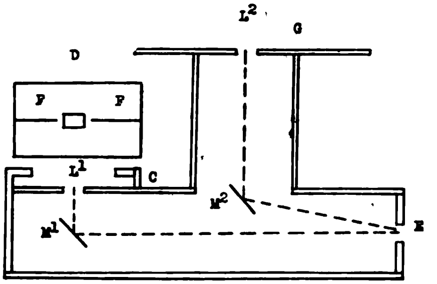
This is surely a fine specimen of the noble bird and is an excellent photograph except that the print is just a trifle flat and lacking in contrast. Possibly a harder grade of paper would yield a snappier print. The bird is well placed in the picture space and the simple background helps very much in making the picture successful. Made with an Ica camera, 6½ x 9 cm Hekla lens of 3½ inches' focal length, used at *f*:6.8, bright light at 3 P. M. in November, exposure one-twenty-fifth second, Hammer Ortho Extra Fast Plate, Thermo pyro developer, enlarged on P. M. C. No. 7.



THE PHOTOGRAPHIC REVIEW

E. J. Wall, F. C. S., F. R. P. S.

A Simple Photometer — H. Naumann describes the following very simple photometer for measuring densities or matching filters, which can obviously be made of wood at very low cost. The only expensive item is the neutral wedge. As the drawing is practically to scale anyone can measure up and obtain the necessary dimensions. The important point is that the distance EM^1L^1 must be equal to EM^2L^2, and this should be the distance of distinct vision, namely 10 inches. M^1 and M^2 are mirrors, the former being at an angle of 45° to the line M^1E, whilst M^2 is approximately at 50° degrees. The exact angle of this latter can be easily found by trial and error, as it should reflect the aperture L^2 side by side with and contiguous to L^1. The neutral wedge is laid on the top of the little table over the aperture L^1, and should slide easily under the arms CC. The top of this table is shown in *D*, with the aperture L^1 and the two lines *F F*, exactly cutting the center of the aperture. These lines enable one to read accurately the density marked on the edge of the wedge. The negative to be read is placed on the larger table *G*, which should be preferably provided with a pair of weak springs to hold the negative in place (*Zeits. wiss. Phot.*, 1922, **21**, 113). There are doubtless many who would like to do a little sensitometry but are deterred by the cost of the apparatus, and this little photometer should be of considerable assistance. There are one or two improvements or suggestions that occur to one. It would probably be more convenient to place M^2 on the same line as M^1 and parallel to it, that is at an angle of 45 degrees, and remove the silver from a small patch in the center which would enable one to see M^1 through the same. One would thus have perfectly contiguous fields. The shape of the patch to be removed is immaterial; it can be either circular or rectangular, but it should not be too large, otherwise one would see the whole of the other mirror or beyond it. The apertures L^1L^2 need be only about 3 mm broad and 6 mm long. It would be far preferable, and much more accurate readings could be obtained, if both the apertures in the tables had pieces of opal glass, matt on one side, fitting over the wedge and the negative, and the latter must have its gelatine film in contact with the polished face of the opal. The opal glasses could be arranged so as to be carried by small spring frames, so as not to shift when the wedge or negative were moved. This would obviate the scatter of the light by the silver of the negative, which always causes errors in photometric readings. Better results would also be obtained if the mirrors were silvered on their surfaces, although this is not absolutely essential. The neutral wedges, properly calibrated, can be obtained from the Kodak Research Laboratory, and one with a rather high constant should be obtained. The center "wedge constant" is the logarithm of the density per centimeter. Naumann used one with a constant of 0.58, but one with a range from zero to 4.0 would be ample, for one never wants to or can read above a density of about 3.5. Naumann suggests as a recommendation for this instrument that it can be used with one light source, but personally I should prefer to use two ground glass Mazda lamps in series, as this would enable one to obtain equalization of the two photometer fields before starting to read, by slightly shifting the distance of one or other of the lamps, and this is essential for accurate work. The neutral wedges can be obtained in various sizes, ranging from 10 to 20 cm in length. The longer the wedge the easier it becomes to estimate the density at any point. Naturally the densities of the wedge should be written on one edge, so as to make it easy to read that which is opposite the lines *F F*. The eyehole *E* should not be large; a 2 mm circular aperture is quite large enough; with a larger hole there is a chance of not getting the eye central and then there is a chance of false readings.



Washing Prints and Negatives — Like everything else, water is taxed pretty heavily in Germany at the present time, and "H" calls attention to the economy that may be effected in washing. If running water be used with a consumption of 450 liters per hour (118 gallons) there is still considerable hypo left in the prints at the end of an hour and even with two hours washing, although hypo could not be detected in the wash water, there were still measurable quantities in the paper fibers. If washing is effected in dishes, there are two methods that may be adopted, one in which the water is frequently emptied away and the dish filled up, and the other in which the prints are squeegeed between filter papers or blotting boards at each change. Allowing 100 ccm. to every 234 qcm (3½ ozs to 36½ sq. ins.) and changing the water every five minutes, the following table shows the quantities of hypo in the prints by the two methods:

Water change	Not squeegeed	Squeegeed
1	0.558 g	0.440
2	0.049	0.022
3	0.007	0.004
4	0.002	0.0019
5	0.001	0.0007
6	0.0006	0.0006
7	0.0003	0.0003
8	0.00016	0.00016

From this it is obvious that with seven changes of water the hypo residue is the same and the total consumption of water is 700 ccm (approx. 24 oz.). It is assumed that the prints are kept in motion all the time and not allowed to stick to one another. With plates of the same area, and allowing 500 ccm (17½ oz.) per change, five changes will be enough to reduce the quantity of hypo to 0.0005 g, which is

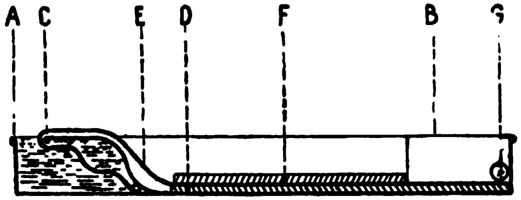


Fig. 1

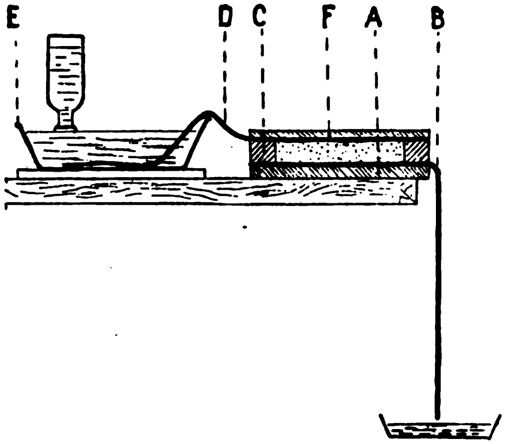


Fig. 3

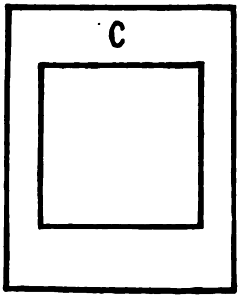


Fig. 4

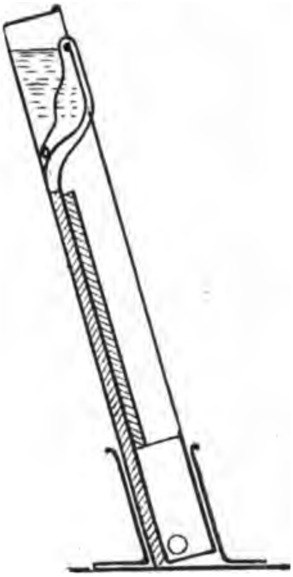


Fig. 2

harmless, entailing a total consumption of 2,500 ccm (8½ gallons) (*Phot. Chron.*, 1922, **29**, 72). Although not credited to them (and the Editor says he pays for all these contributions), this investigation was carried out by Lumière & Seyewetz (*Bull. Soc. franç. Phot.*, 1902, **43**, 259).

RAPID WASHING OF PLATES AND PRECIPITATES.—L. Lumière suggests the following distinctly novel and effective method of washing plates and precipitates by capillary attraction, diffusion and displacement, which should be of considerable interest to those who have to pay water bills. It is a well-known fact that a woven cloth acts as a syphon if hung over the edge of a basin, due to the capillary attraction in the interstices of the fibers. The nature of the fibers, the closeness of the weave and the viscosity and surface tension of the liquid naturally play an important part in the rapidity of the flow; but with both paper and cloth it is practically constant for a given height of fall, which with cloth is about 18 cm. Lumière suggests a metal dish made as shown in Fig. 1, in which *A* is the dish turned up at one end to form a cover *B*, practically a little reservoir. At the *A* end is also a reservoir formed by the curved piece *C*. On the bottom of the dish is placed a sheet of glass *D*, over which is placed the cloth E, which must be long enough to reach to the bottom of the two reservoirs, and *G* is a waste pipe.

The *A* reservoir is filled with water and a thin layer of water placed in the dish over the glass and cloth so as to avoid air bubbles. Then the plate to be washed, *F*, is placed film down on the cloth and the dish raised to an almost vertical direction as in Fig. 2. In this way the water siphons down the cloth and a 9 x 12 cm plate (3¼ x 4¾ in.) was thoroughly washed in from 12 to 15 minutes with a total consumption of water of 30 ccm (practically 1 oz.). For washing precipitates a slightly different arrangement is to be adopted. Fig. 3, *A* is a sheet of glass, which is covered with a sheet of wet cloth *B*, long enough to hang down at one end. On the cloth is placed a little cell or frame of glass, hard rubber or porcelain, of from 5 to 10 mm thickness, Fig. 4. The precipitate is packed into this frame and over the top is laid another piece of cloth *D*, one end of which dips into the dish E, while the other end stops short at the edge of the little frame. A sheet of glass, ground on the lower face, is placed on top of this piece of cloth. The inverted or Mariotte's bottle is placed about 1 cm above the edge of the dish *E* and it should be 2 to 3 cm above the top of the small frame. The precipitate is thus enclosed in a cell from which the water is constantly withdrawn by the cloth *B*, fresh being supplied by the cloth *D*. A precipitate will be practically sufficiently washed when about twice the volume of the cell in water is collected in the outflow dish. It is only necessary to remove the glass *F* and the cloth *D* and to leave the cell for a short time, and the precipitate can be collected as a paste. With a cell 5 x 5 cm and 1 cm in depth, thus containing 25 ccm of precipitate, the latter was completely washed in 1½ hours with a total consumption of water of 50 ccm. This last device is also applicable to the extraction of a soluble substance, from an insoluble admixture, with a suitable solvent (*Rev. Franç. Phot.*, 1922, **3**, 109).

HYPERSENSITIZING AUTOCHROME AND OTHER PLATES. — A sealed envelope deposited with the Société Française de Photographie in 1913, was recently opened and the contents made public. The fundamental idea of the new process is that in the majority of orthochromatizing baths the addition of ammonia is necessary and that the action of this is to dissolve a very minute quantity of the silver halide, which combines with the dye. Based on this a method was evolved in which a small quantity of silver chloride was added to the hypersensitizing bath for autochrome plates, and the increase in sensitiveness thus obtained is about 30 times. Two stock solutions are prepared:

A

Pinaverdol solution	324 ccm	5 oz. 88 min.
Pinachrom solution	162 ccm	2 oz. 284 min.
Pinacyanol solution	76 ccm	1 oz. 104 min.
Alcohol 90° to	1000 ccm	16 oz.

The dye solutions are all 1:2000 in alcohol 90°.

B

Silver chloride	2 g	15.36 gr.
Ammonia 22° Be.	8 ccm	61.5 min.
Water tc	1000 ccm	16 oz.

For use mix:

Alcohol 90°	200 ccm	3 1/5 oz.
Solution A	100 ccm	1 3/5 oz.
Solution B	100 ccm	1 3/5 oz.
Water to	1000 ccm	16 oz.

The plates should be bathed for 3 minutes, then whirled to remove adherent solution and rapidly dried with a current of air. Unfortunately the plates will not keep longer than 24 to 32 hours, and then fog supervenes. This process is also applicable to ordinary plates. L. Gimpel has obtained on autochrome plates thus sensitized, fully exposed results in 1-100 of a second in a good light, and good results with a slow shutter on the stage with ordinary stage lighting. During the discussion on this paper A. Richard stated that the acetates, especially ammonium acetate, stabilized panchromatic and hypersensitized plates (*Bull. Soc. franç. Phot.*, 1922, **64**, 90; *Rev. Franç. Phot.*, 1922 **3**, 90). That the solvent action of ammonia comes into play is probably correct as the cause of the increased sensitiveness; but it is not the cause of color-sensitizing, as plain aqueous dye baths will color-sensitize. Hyslop (*Brit. J. Phot.*, 1887, **34**, 88) used silver chloride dissolved in ammonia in conjunction with erythrosin, and the use of silver nitrate with ammonia and dyes was published quite early by Mallmann and Scolik, Waterhouse, etc. A plain ammoniacal solution of silver nitrate as a bath for increasing sensitiveness was suggested by Stocsh (*Phot. Mitt.*, 1881, **18**, 70). For those who may wish to try this process, the simplest way will be to dissolve 23.7 g silver nitrate in 100 ccm distilled water and add enough hydrochloric acid to precipitate the chloride, well wash with water till the washings are no longer acid and then dissolve in ammonia. This gives 20 g silver chloride. This must be prepared in the darkroom.

THE PHOTOGRAPHIC REPRODUCTION OF WATERMARKS.—O. Mente and F. Franke propose the following method of obtaining reproductions of watermarks on paper, whether written or printed on one or both sides. A sheet of development paper is exposed to white light, developed and fixed, and after well washing bleached in mercuric chloride, washed and dried in the dark. A piece of unglazed procelain is now soaked in ammonia solution and one surface wiped free from solution. The paper bearing the water mark is placed in contact with the bleached development paper and on top of this the ammonia-soaked porcelain slab. The fumes of ammonia penetrate the watermark before the rest of the paper, because the mark is thinner, and thus blacken the mercury-bleached film. The image can then be traced over with lead pencil or waterproof ink and the silver-mercury salts removed with a solvent such as cyanide (*Zeits. wiss. Phot.*, 1922, **21**, 227).

ACID AMIDOL FOR THE BUSY PRINTER. — B. R. Rawlins strongly recommends acid amidol for the trade printer. A stock solution is made of the sulphite thus:

A

Sodium sulphite, dry	40 g	4 lb.
Hot water	1000 ccm	3 gal.

B

Potassium metabisulphite	1.5 g	2½ oz.
Hot water	1000 ccm	80 oz.

When cold, A is added to B and the total bulk made up to 4 gallons, or 1250 ccm. It should be noted that these are English gallons of 160 oz. To make the working bath use:

Acid sulphite solution	500 ccm	40 oz.
Water	500 ccm	40 oz.
Amidol, dry	5.7 g	200 gr.
Potassium bromide	see below	

The quantity of bromide used is of great importance. Bromide and development papers develop nicely with a good black color with one-quarter grain of bromide to the ounce of developer, and to obtain a warm or olive black on development papers it is necessary to add more, up to 6 grains per ounce, and also to dilute the developer. It is interesting to note that in diluting the developer for development papers the contrast with the vigorous grades is increased, but quite the reverse happens when using a diluted developer for bromides. Potassium bromide has little or no influence on the contrast given by any particular paper, but it is in practice necessary to prevent fog and to control the color of the image. Absence of bromide will give quite a blue color on gaslight papers, but the whites will often be degraded. The following table may be useful when a particular color is desired:

Process	Grade	Exposure	Grains pot. brom. per oz.	Color
Development	Vigorous	Correct	¼	Pure black
"	Normal	Double Normal	1	Olive black
"	Soft	4 times normal	4	Brown black
Bromide	All	Correct	¼	Pure black
Bromide	All	Normal plus 1-3	1	Greenish black

The latter color is produced on bromides that are to be toned in the hypo-alum bath. The development is stopped short of finality, so as to ensure a warm sepia tone in this toning bath. Bromides developed to finality give a rather cold tone in hypo-alum. It is convenient to make up a large fixing-bath for a busy man. A good formula is:

Hypo	18 lbs.
Hot water	34 qts.

When cool, add the following solution:

Potassium metabisulphite	5 oz.
Hot water	2 qt.

These are English quarts of 40 oz. (*Brit. J. Phot.*, 1922, **69**, 293).

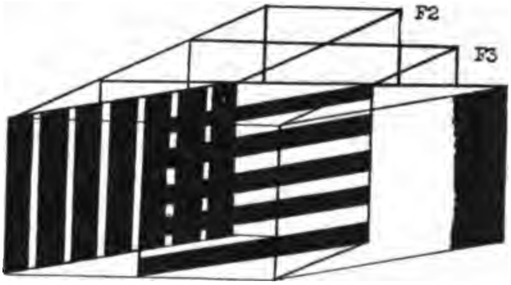
DESENSITIZING WITH SPENT DEVELOPERS. — J. G. F. Druce has been examining the action of spent or oxidized developers as desensitizing agents, as suggested by Lüppo-Cramer, and finds that oxidized amidol will act as a desensitizer. To make quite certain that amidol was completely oxidized, 6 g of freshly precipitated silver bromide was well washed to remove other salts and warmed with 500 ccm of ordinary amidol developer (presumably containing about 6 g of amidol). The undecomposed bromide and metal formed were filtered out and the filtrate used as a desensitizer. Plates were bathed in this solution, warmed to 21° C. (70° F.), for 10 minutes and then developed in the usual way. As soon as the plates were covered with the developer a bright yellow light was turned on, instead of the red, and the plates could be occasionally held up to the diffused light without fog, and once diffused daylight was admitted to the darkroom without fog. The oxidized amidol is a deep reddish brown color. Para-phenylendiamin and paraminophenol, like hydrochinon, are oxidized to quinon, which is not a desensitizer. Paraminophenol, when carefully oxidized, yields quinon chlorimide, and this appears to be the desensitizer in a normal developer. An amino group has not been detected in oxidized amidol developer. These facts are contradictory to Lüppo-Cramer's theory that the amino groups are the desensitizers, but the evidence is not conclusive, as the exact constitution of oxidized amidol has not been determined (*Brit. J. Phot.*, 1922, **69**, 296).

The Imperial Dry Plate Co., of London, have placed plates on the market in which a desensitizing dye is incorporated with an efficient backing, so that all one has to do is to place the plate in the developer and rock, when the dye diffuses out (*Brit. J. Phot.*, 1922, **69**, 300). R. E. Crowther (*ibid.* 1921, **68**, 232) stated that the transparent red backing, used by the Kodak Co. for all but their panchromatic plates, was a very strong desensitizer.

The Keeping Power of Panchromatic Plates. — E. Stenger reports on 14 different plates panchromatized by addition of the dye to the emulsion, and 10 sensitized by bathing, all of which had been kept from 12 to 19 years. Of the former 8, or 57 per cent, were still usable; 5, or 36 per cent, impossible, and 1 doubtful. One particular make of plate which in 1906 showed a fog of 0.55 now showed a fog of 0.88. When freshly made, the blue sensitiveness was far in excess of that for the orange-red, and this was less than that for yellow-green. In the old plates the orange-red sensitiveness, wave-length 580, was greater than that for the yellow-green at 530, and approximately the same as for the blue. Of the bathed plates, which were originally prepared between 1903 and 1909 by Stenger, 6 were bathed with isocol, 3 with ethyl red and 1 with pinachrom, an ammoniacal bath being used. All these plates were hopelessly fogged and useless.

Stenger has also made experiments, using ethyl red as sensitizer, to see whether the addition of bromide to the sensitizing bath would keep down the fog. He used a bath containing 33 per cent of alcohol with geometrically increasing ratios of bromide from 0.01 to 0.12 per cent, and while there was a lessening of fog there was also lessening of the color-sensitiveness. The plates were kept 24, 71 and 116 hours at 55° to 60° C. (131°-140° F.) and in all cases there was marked increase of fog and reduction of color-sensitiveness with increase of time (*Zeits. wiss. Phot.*, 1922, **21**, 246). Stenger's idea of using such high temperatures is to shorten the time of the observation, on the assumption that this increase in heat is equivalent to long keeping at lower temperatures, because no one ever keeps plates at such temperatures in practice. A long series of experiments were carried out by the writer in 1917 as to the action of various additions as fog preventers with bathed plates, but in every case when fog was reduced there was also reduction of color-sensitiveness. There is also another point which Stenger does not allude to and that is that the addition of any salt or electrolyte to the sensitizing bath causes very rapid precipitation of the dye which, as is probably well-known, is in colloid suspension, at least in aqueous baths, and these latter can alone be used if the highest color-sensitiveness is required; the addition of alcohol to the bath certainly obviates or delays to some extent the flocking out of the dye but at the expense of color-sensitizing.

The Gorsky Process of Color Photography.— Some interest has been aroused by an exhibition given in London by Prokudin-Gorsky of a short reel of three-color subtractive films, and various rumors have been current as to the methods adopted. The optical device used for obtaining the three negatives is a system of prisms with silvered faces. The first prism, that is the one opposite the lens, is provided with silver bars, their width being three times that of the clear interspaces. This obviously transmits one-third and reflects two-thirds of the incident light to another prism base also with silver bars, the width of the bars being equal to the interspaces. Half the light is transmitted and half reflected to the base of a third prism which is completely silvered, although this is partly removed in the diagram to show the other bars. Three separate films are used in staggered formation at *f*:1, *f*:2, *f*:3, so that the optical paths are equal (*Conquest*, 1922, **3**, 52). Precisely the same form of prisms and silvering was patented by W. H. Kunz (*U. S. Patent*, 1,320,625, 1919). No definite information is to hand as to the method of printing adopted by Gorsky; but in *Eng. Patent* 168,100, 1920, a process is claimed in which the minus-yellow image is first obtained, then iodized and treated with auramin; the film is then to be recoated and the minus-red image obtained and treated with rhodamin, again recoated and the minus-blue image obtained by cyanotype toning. This is a costly and very troublesome method, and it is possible to obtain three superimposed images by a much cheaper and easier method.



A New Orthochromatizing Dye. — W. H. Mills and Sir. Wm. Pope announce the discovery of a new color-sensitizer, 2-para-dimethylaminostyrylpyridine methiodide, which is prepared in a very simple manner, of which full working details are given. The new dye is readily decolorized by mineral acids, but less readily than the isocyanins, and it is the simplest member of a novel series of compounds which may be expected to act as sensitizers. Plates bathed in an aqueous solution,

transferred to another gelatine surface, after removal of the metallic silver of the image by a solvent. For the three-color process tartrazin is suggested for the yellow, xylene red or crystal ponceau for the red, and patent blue for the blue (*U. S. Patent* 1,417,328, 1922). Exactly on what grounds this patent has been granted is not quite clear, unless it be for the individual protuberances photographically formed; but this is mere camouflage and describes a phenomenon that has been known for a long time. J. W. Swan (*Eng. Patent* 2,969, 1879) patented the formation of a relief from the hardening action of pyro which was to be used for photo-relief printing; but here there was no solution of the gelatine. Warnerke (*Eng. Patent* 1,436, 1881) patented the use of an actual washed out relief produced by the action of pyro without sulphite. Silbermann (*Reproduktionsverfahren*, 1907, **2**, 41) fully explained the action of the oxidation products of the developers and the relief-restraining effect of the sulphite, for he says: "It is well known that in the development of negatives there appears a more or less marked relief formation, which among other things depends upon the developer. Pyrogallol, eikonogen, hydrochinon and amidol give a strong relief; metol and diamidophenol a low one and glycin and rodinal practically none. . . . That the insolubility of the gelatine is dependent on an oxidation process is also clear in that the presence of sulphite is prejudicial to the formation of the relief." R. E. Liesegang (*Phot. Archiv*, 1894, **35**, 273; 1896, **37**, 183) also commented on the relief with pyro; and Haddon and Grundy (*Brit. J. Phot.*, 1896, **43**, 356) proved that pyro solution had no tanning action on gelatine unless oxidized, and that when large proportions of sulphite are used in the developer the reducing agents are very little oxidized and the gelatine is left soluble and a very low relief is formed, and say: "An image in high relief is only formed under conditions which permit of the oxidation of the developer at the points at which it reduces the silver bromide, the gelatine at these points being tanned by the oxidation products." It will be seen, therefore, that this process is quite ancient.

THE FIRST PERFORATED FILM. — In a recent article on cinemotagraphy Regnault stated that he had not been able to find out who was the inventor of the perforated film. E. Coustet stated that he had found that the first mention of it was in a description of Reynaud's "théatre optique" in *Nouveautés photographiques* by Dillaye, published in 1894, p. 211 (*Rev. Sci.*, 1922, **60**, 202; *Tech. Ind. Phot.*, 1922, **2**, 60). It is possible to go even one better than Coustet, for C. P. Stirn of New York, in *U. S. Patent*, 418,343; *Eng. Patent* 6,886, 1889, patented a hand camera in which a sprocket wheel with 8 pins was used, which perforated the film and shifted it after each exposure. This was a hand camera and the pins perforated the film in the camera. Edison is usually credited with having used the first perforated film, and I believe collected royalties for many years on every foot of perforated film that was used. His patent was *U. S. Patent* 589,168, 1897, and he claimed: "An unbroken transparent or translucent tape-like photographic film, thereon equidistant photographs of successive positions of an object, all taken from the same point of view, such photographs being arranged in a continuous straight line sequence, unlimited in number save by the length of the film." This patent was for a camera as well, and the perforated film claim was re-issued separately as No. 12,192, 1904. The date of Edison's original application was Aug. 24, 1891, therefore three years before Dillaye's note. Le Prince in 1888 had used a perforated tape with sprocket wheels, but this was of metal.

GREEN AND OLIVE TONES. — R. Namias suggests the following method of making vanadium chloride for toning and the baths for green and olive tones.

Ammonium vanadate	100 g	770 gr.
Hydrochloric acid	250 ccm	4 oz.
Water	250 ccm	49 oz.
Sodium bisulphite, dry	60 to 80 g	46 to 61 gr.

Heat till the solution turns blue and dilute to 1000 ccm or 16 oz. The print should be bleached in a 2 to 5 per cent solution of potassium ferricyanide, washed and toned in:

Vanadium chloride, as above	25 ccm	192 minims
Ferric chloride	2.5 g	19 gr.
Ammonium chloride	100 g	768 gr.
Water	1000 ccm	16 oz.

More ferric chloride gives blue tones. This gives green tones. For olive the print is first toned in the ordinary uranium bath then treated with the following, after washing:

Ferric chloride	5 g	38½ gr.
Hydrochloric acid	10 ccm	77 min.
Water	1000 ccm	16 oz.

Both prints should be fixed in an acid hyposodium acetate fixing bath (*Il Prog. Foto.*, 1922, **29**, 85; *Phot. Abst.*, 1922, **2**, 80). It is obvious that the chloride is made on the same lines as recommended by me for the oxalate (*This Journal*, 1922, 396). My objection to all baths for toning which contain chlorides still holds good, as the images are muddy, because of the silver chloride formed; when the above bath is used for transparencies, the greens are distinctly olive in shade.

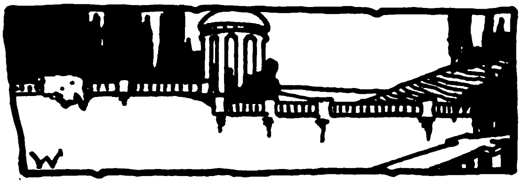
BROMOIL TRANSFER PROCESS — A direct print or enlargement should be developed with a non-tanning developer, such as amidol, and fixed in a plain hypo bath and well washed, then bleached in the following:

Potassium bromide	10 g	77 gr.
Cupric sulphate	15 g	115 gr.
Potassium bichromate	5 g	38½ gr.
Water	1000 ccm	6 oz.

Dissolve in the above order and add sufficient hydrochloric acid to form a clear solution. After complete bleaching, wash well and treat with a 1 per cent sulphuric acid bath to remove any yellow color. Again wash and fix in a 20 per cent solution of hypo and wash. Immerse the print for 10 minutes in:

Glycerine	333 ccm	5 oz.
Water	667 ccm	10 oz.

Place face up on a clean glass plate, and roll down with a roller squeegee. Now fasten the edges down to the glass with strips of gummed paper. Ink up with a roller with a greasy ink, litho or collotype. If the paper is too much hardened, the ink will take on the parts that should be white, and then it should be immersed again in the glycerine solution at a temperature of 30° C. (86°)F. or until the ground shows a distinct relief; then stick down again to the glass and ink up. It is stated that at least 100 pulls can be taken from this, and, of course, in any color. The process is also applicable to three-color work. (*Phot. Ind.*, 1922, 494). The use of this transfer process was first published almost simultaneously in England, France and Germany at the end of 1908 and has been repeatedly recommended since.



QUESTIONS & ANSWERS

Process for Making Prints From Drawings.— B. H., Dallas, Texas, — asks for a book describing the various ways of making blue prints from drawings, or any process, modernized, of making prints from drawings other than blue prints. "I desire to, principally, make prints from Patent Office drawings for office record and if possible produce lines other than regular blue print style." *Answer.* We think the instrument known as the Photostat would be the kind of thing you are looking for. This is the modern way of making prints from drawings, maps, plans, etc. other than blue prints. You could get prices and all details from the Commercial Camera Company, 343 State Street, Rochester, N. Y.

Using Filter with Soft Focus Lens. — G. J. B., Chicago, Ill., states — I have a 9 inch Struss lens for a 4 x 5 camera. What advantage would there be, if any, in using a cloud filter (sky filter) for clouds? Lens not being corrected (spherical or chromatic), wouldn't the half filter change the focus for one half of the plate? If so, that would mean that a sky filter cannot be used on this soft focus lens. What do you consider a good filter to use on this lens (2 inch diameter)? I thought of a K1 and K2, the first for short exposures and clouds and the latter for flowers and such like. I refer to the Wratten filters. *Answer.* A sky filter is not a satisfactory instrument to use because there are colors and tones in other parts of the picture that need correcting as well as in the sky and it seems rather foolish to correct half the picture and leave the other half alone. The use of a filter with a soft focus lens tends to sharpen up the definition a little, so that at full aperture the definition with the filter is about the same as the definition without any filter at a smaller opening. The use of the filter does away with some of the chromatic aberration in the lens. The K series are good filters to use, but they should be used, of course, with the Wratten plates for which they are adjusted. You will find the K1 is generally useful for outdoor work, clouds and landscapes, and the K2 for still-life and for such subjects as call for a fuller correction of tones.

Making a Focusing Scale. — H. H. N., Minneapolis, Minn., writes — I should like to avail myself of the privilege of presenting a problem in camera construction to your readers, in the hope that it may be interesting in itself, as well as in the hope that I may find among them someone sufficiently skilled to help me out of a difficulty that has given me considerable annoyance. I have three cameras and only one lens, a Ross Anastigmat of 7.7 inches focus, or thereabouts, with an aperture of *f*:5.6. I bought three flanges for this lens, a somewhat expensive one, and fitted them myself to my three cameras, so that I use the same lens all the time, and this is a good enough arrangement in itself, but the difficulty that
has arisen is that I have to go through th
fashioned process of putting a black cloth ov
head and focusing the scene before I can ta
picture. The results are all right but the proc
un-American and obsolete, and if it were not t
have been an enthusiastic photographer for a
twenty years, I would give up photography righ
I have tried this plan — I focused sharply a
paper at 5 feet at *f*:5.6, using a tapeline to be s
my distance and made a mark on the focusing
and *thought* that when the pointer was at this
on all subsequent occasions, I was sure to h
perfectly good sharp focused picture, but dev
ment of the plate proved the falsity of this reaso
Needless to say I repeated the process for 10,
25 feet, but the result makes me think tha
matter of constructing a focusing scale is bese
some difficulty. Why should such an appa
simple thing be difficult?

Can you tell me the formula for discoveri
exact length of the focus of a lens, for it may b
this is 7.9 inches instead of 7.7 inches, thoug
would not affect my way of settling the ma
the focusing scale. Another thing, if I could
my focusing scale correctly, would the same
be correct for *f*:5.6, *f*:8, *f*:11, *f*:16, etc.?

To pass to my second difficulty, my favorit
era is a Houghton's "Sanderson" which I pu
in London, England, when on a visit ther
years ago. It is 3¼ x 4¼ inches, but is m
plates only. Is there anyone amongst your
who has fitted a back to a plate camera for it
roll film. You see my lens and shutter is t
to be fitted to the front of a Kodak and I cann
it fitted by any of the shops. I should be
know the best way of constructing a back
roll film, though it would be necessary for it
the nature of an extension as the bellows co
back to the frame of the glass focusing
Answer. In reply to yours of June 8th, w
say that we see nothing in the least bit un-A
or obsolete in focusing on the ground glass w
have a good lens.. All pictorial photograph
and it is the only way in which you can get
type of definition you desire, unless you ar
reflecting camera. Focusing with a scale
entirely unsatisfactory for serious work wi
grade anastigmat lens.

As to making a focusing scale, this is
careful process and we would suggest that
be advisable for you to use a focusing ma
this purpose. The usual way is to mak
mark on the ground glass and then cemen
scope cover glass over it with balsam.
using a focusing magnifier, it is possible
aerial image in the plane of the penci
only in this way can you get accuracy
mark your focusing scale. There are
more methods for measuring the focal l
lens. One mathematically correct met
fasten the camera firmly to a solid supp
foot rule in front of the camera and adjus
so as to get the image on the ground gl
the same size as the object which, of cour
a long bellows. Mark the position of
glass on the support. Then refocus on s
at least four or five hundred feet away ar
position of the ground glass again. Th
between the two marks is the focal length
or one quarter the distance between the
and the object in the first case is the foc
the lens. There are today no devices

fitting roll films to plate cameras. Probably the easiest way would be to buy a cheap roll film camera, discard the front and bellows and fit it to the back of your plate camera. It would be a clumsy job at best and one which we would hardly recommend.

NAME OF LENS MAKER. — B. M., Memphis, Tenn., writes — From your great fund of general photographic knowledge perhaps you may be able to give me some information. I have a lens described as follows: Planastigmat — 20 inch focus — speed *f*:5.5 — 20 x 15. The original hood has been taken off and a special hood to hold filters substituted. The name of the maker may have been on the original hood. The Bausch and Lomb Optical Company have informed me that they do not know the lens, but that it is probably of foreign make. Do you know anything of this lens or its special characteristics? *Answer*. — In reply to yours of June 8 we would say that A. E. Staley & Company of London made an *f*:3 Planastigmat portrait lens which is a modified Petzval portrait lens with the lenses of the rear combination reversed, as was done by Dallmeyer. This is a two lens, four glass objective. O. Sichel of London made an eight lens Planastigmat similar in exterior appearance to the Goerz Dagor, but with the biconcave lenses replaced by two. Perhaps you will be able to determine which of these two lenses you have, if either.

BLUE GLASS FOR EXPOSURE METER. — A. D. M., Portland, Ore., writes—In your "Secret of Exposure" you say — "a blue glass dial is a great help in preventing the tendency to match color instead of darkness." Watkins in his manual also mentions a blue glass but in neither case is the shade or tint of the blue glass given. Will you kindly tell me how deep a blue glass is necessary for this dial. In the optical trade blue glasses are used and the shade or tint of blue is numbered so that all that is necessary is to order by number in prescribing blue glasses for wear. *Answer*. — The tint of blue glass necessary for an exposure meter is not very important, except that, naturally, it must be rather light in tone. It simply cuts out some of the yellow rays and gives a monochromatic effect.

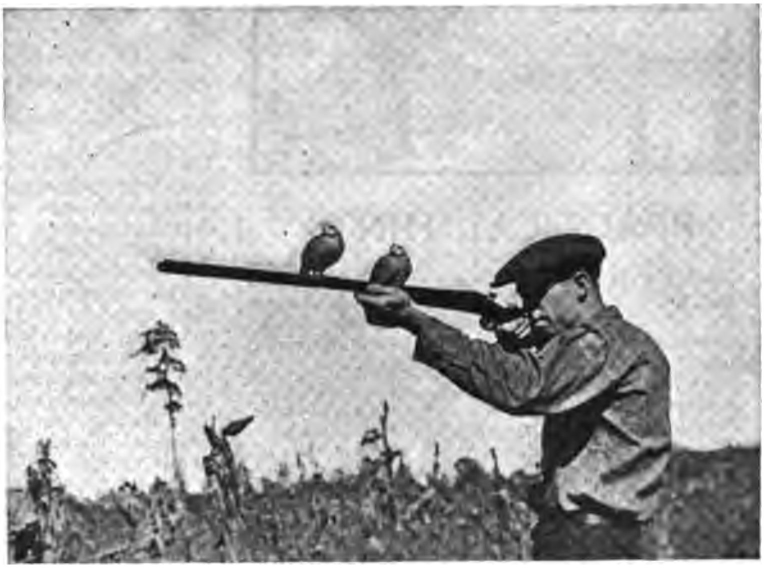
FORMULA FOR GUM PRINTING. — C. P., Racine, Wis., asks for a reliable formula for gum printing and also where the materials for same can be bought. *Answer*. All you need for gum printing is some good paper that is well sized, gum arabic, a saturated solution of potassium bichromate and the pigment. A sizing mixture for the paper may be made by using 3 to 5% solution of gelatine in water, adding 5 drops of formalin to the ounce. If the paper is already well sized, this need not be used. The gum solution is made by suspending 2 ounces of good, clean gum arabic in tears in a muslin bag in 6 ounces of water for about two days. The pigment may be ordinary moist water colors in tubes. A mixture may then be made of 10 parts gum solution, 5 parts bichromate solution and about half an inch or so of the color squeezed from the tube. Less bichromate will make the paper less sensitive. These must be thoroughly mixed by rubbing with a palette knife on a piece of glass. The paper is coated with this mixture with a camel hair mop, making it as smooth and as even as possible. The paper may then be dried and when dry it is sensitive to light. The image in printing is not visible and the time must be judged with an actinometer. As a general rule [illegible] the same exposure in printing as a P. O. P. print to reach the right density. After printing place the exposed sheet face down in water, and the pigment will wash away in the parts not affected by the light. By increasing the temperature, by spraying, sponging or brushing the color may be removed more easily and this is where the personal control comes in. If another printing is required, the print when dry may be coated again and the process repeated. It must be registered in the printing frame as accurately as possible. There are so many variable factors, it is hard to give any hard and fast rules; each worker must gradually formulate his methods by careful experiment. A good book on this process is Pictorial Landscape Photography by the Photo Pictorialists of Buffalo. There is no other that is up to date. Zimmerman's method of Gum-Bichromate printing is published in the Photo-Miniature No. 113, now out of print.

ACTINOMETERS AND EXPOSURE METERS. — J. W. J., Hatboro, Pennsylvania, asks for information on actinometers and an instrument to measure the length of exposure of his camera to verify if the speeds as indicated on the shutter are correct. Any information along these lines will be appreciated. *Answer*. There are various actinometers on the market; the Watkins meters, the Wynne meter and others. They measure the strength of the light by the exposure of a piece of sensitive paper which is timed to match a tint on the face of the meter. This is, we think, the surest way of testing the strength of the light, especially for those who have not had much experience in judging such things. We do not think there is any instrument now on the market for measuring exposures, that is to say, for testing shutters, but in the issue of AMERICAN PHOTOGRAPHY for March, 1922, there was an article entitled — "Know your Camera Shutter," in which a simple and practical method of testing shutter speeds was described. The author used a phonograph for this purpose, but, as he points out, it is only necessary to photograph some object moving at a known rate of speed. A wheel revolving at a known rate would do as well as a phonograph record.

HISTORICAL PICTURES. — L. J. W., Mechanicsville, N. Y., writes — Do you know of any concern that would be in the market for a set of historical pictures with a short descriptive account? The history of this particular place dates back to treaties with the Indian Tribes and through the Revolutionary War. Any information which you may give will be greatly appreciated. *Answer*. We do not know of any concern that would be in the market for such pictures as you refer to. Possibly, by reading "Cash from your Camera" you might find someone who would be interested in them. This books tells where and how to sell pictures.

USING CONVERTIBLE LENS. — M. D. A., [illegible] Haven, Pa., writes — Would you be kind enough to answer a question regarding camera and lens for a new reader. Have long ago solved the [illegible] weight problem for hunting and fishing [illegible] Kodak with anastigmat lens, *f*:6.8, the [illegible] picture for satisfactory viewing without enlarging [illegible] [illegible] to purchase a plate camera [illegible] [illegible] bellows, with either series [illegible] Series [illegible] [illegible] anastigmat, [illegible] inch focus. In the series [illegible] convertible type [illegible] combination 13 inch focus [illegible]

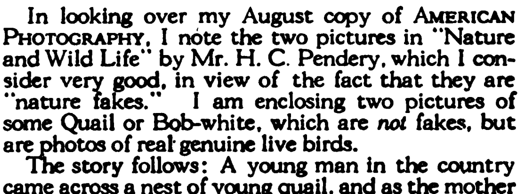
[illegible]



QUAIL IN DIXIE H. C. BURGESS

4, as 12 divided by 3 = 4. Then we have 60 x 4 = 240, and this, divided by the square of 4 + 1 or 25, is 9 3-5 inches. There is a slight error here due to neglect of the separation of the nodal planes, but it is a small fraction of an inch and is of no practical importance. Naturally the result depends on the accuracy of the measurement of the distance and the size of the image. (2) There are also many rules for finding the nearest point in focus with a given aperture. One of the simplest is: Square the focal length in inches, multiply by 100 and divide by the stop number. Half the result is the nearest point in inches. Example: the lens is of 6 inches focus, the stop used *f*:8; then 6 x 6 = 36; 36 x 100 = 3600; 3600 ÷ 8 = 450; 450 ÷ 2 = 225 or 18¾ feet. (3). The circle of confusion is an elastic term which varies with the ideas of the worker. Practically it is the want of critical sharpness in the image of a point. This varies with the distance of the object from the eye; for instance, when examining a small print, say 5 x 4, at the distance of normal vision which is, at the distance at which such sizes are usually viewed, about 10 inches; then the image of any point must not be out of focus by more than a certain amount, which varies with different people's ideas; but 1-2000 of the viewing distance is general. On the other hand with some of the artistic school, sharpness is not permissible and then the disc of confusion may be anything. In the above case the image of the point must not be more than 1-200 of an inch. If on the other hand one was examining a 20 x 16 enlargement of the same subject at a distance of 10 feet, it is obvious that the disc of confusion might be 10 x 12 ÷ 2000 or about one seventeenth of an inch, and yet the image would appear equally as sharp as the small print. It is clear that the circle of confusion cannot be calculated for any camera, unless its dimensions are first determined. In the above answer (2) it was assumed that the disc of confusion was to be one one-hundredth of an inch; but if one sets it at any other figure then the latter must be used instead of the 100.

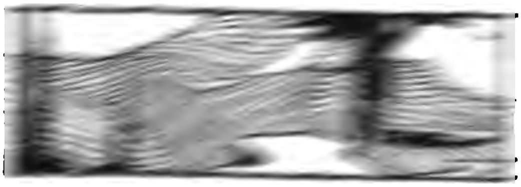
CUT FILM SPEEDS.—A. F. N., Nantucket Island, Mass., asks for the speed of Kodak Portrait Cut films and Kodak Super speed cut films this being used with our *Exposure Tables*. *Answer*. The speed of the Kodak Portrait Cut film is 1, that of the Super Speed cut film ½.



NATURE AND WILD LIFE

In looking over my August copy of AMERICAN PHOTOGRAPHY, I note the two pictures in "Nature and Wild Life" by Mr. H. C. Pendery, which I consider very good, in view of the fact that they are "nature fakes." I am enclosing two pictures of some Quail or Bob-white, which are *not* fakes, but are photos of real genuine live birds.

The story follows: A young man in the country came across a nest of young quail, and as the mother had been killed by a Sportsman (?) (notice the question mark) the baby quail were in a good way of dying of starvation. So the young man put them in his hat, and took them home where, in the course of time, they became as tame as young chickens. They would follow him around the house and yard, would let anybody pick them up, and handle them. He would go in the yard, and whistle, and the young quail would come running up to him, like a flock of chickens. There were eight of them, and the pictures show a few, on the barrel of a gun held by my brother. The rest of the birds, were on the ground, directly under the gun. Pictures were made with No. 3 Special Kodak, stop *f*:11, exposure 1-25 second. —H. C. BURGESS.



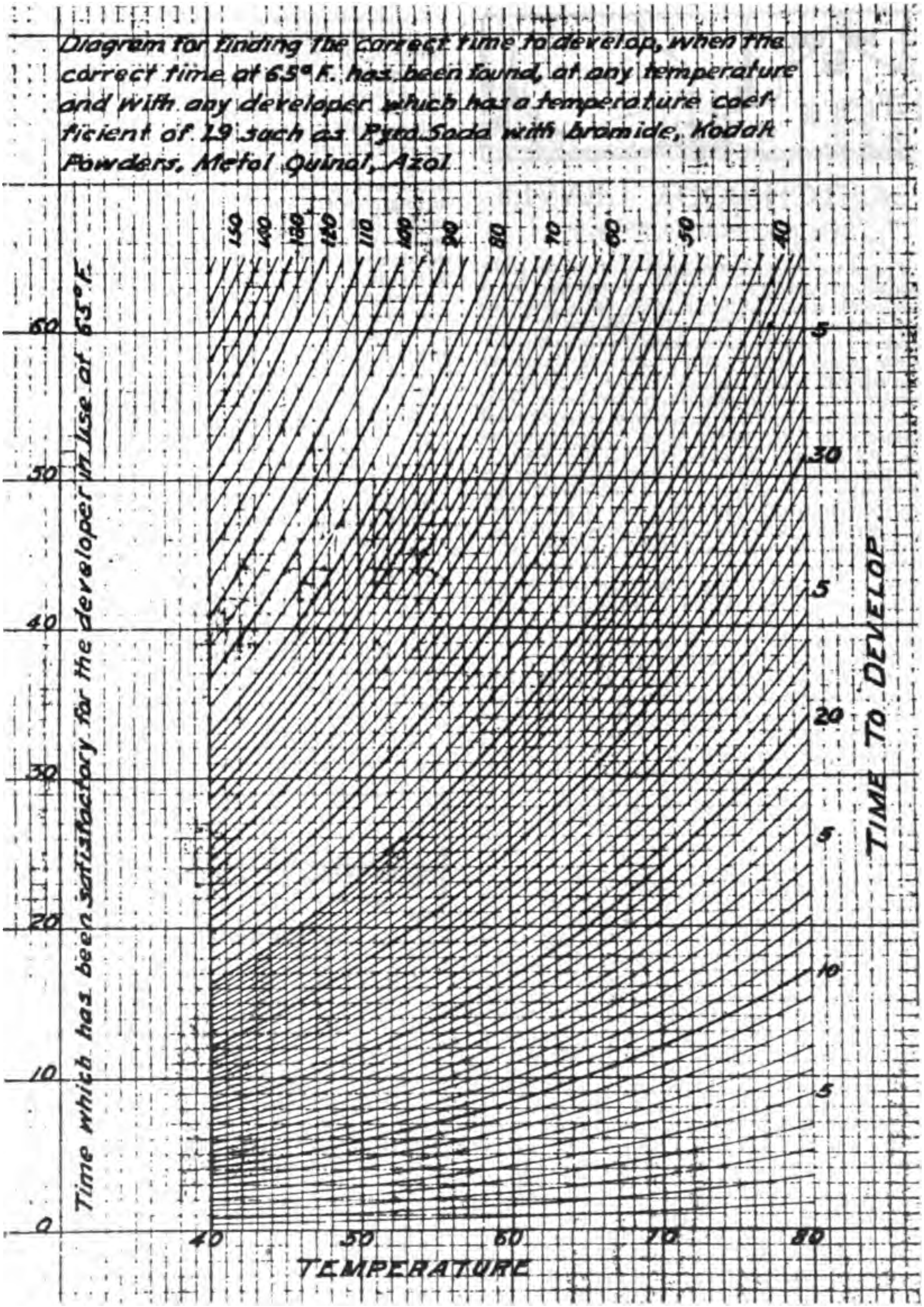


Diagram for finding the correct time to develop, when the correct time at 65°F. has been found, at any temperature and with any developer which has a temperature coefficient of 1.9 such as Pyro Soda with bromide, Kodak Powders, Metol Quinol, Azol.

SKETCH-BOOK LEAVES

THE PHOTOGRAPHIC DRIFT

One of the most pleasing signs of the times is the increasing tendency to regard photography as a year-round hobby, although, of course, its more devoted followers have always so regarded it. The tendency referred to is that shown by the public as a whole, as evidenced by larger purchases of cameras and supplies during the autumn than might be expected from sales records of previous years. Perhaps there are contributing causes of an exceptional nature, such as the steady improvement of business and the greater assurance felt after the practical settlement of the coal and railroad strikes, as well as the stretches of pleasant outdoor weather following what was in the east an erratic and unsatisfactory summer from the standpoint of weather conditions regarded by the man who likes to enjoy himself in the out-of-doors. It may very well be that many persons have been buying recently the cameras and other items of a photographic nature which under more favorable conditions they would have bought weeks and months before, so that the increased buying noticed this fall has been merely a delayed movement on the part of some. But, at all events, if we take the tendency in almost any way, it would seem an indication of greater interest in photography as a year-round hobby.

In this connection it is worthy of note that various causes have during the last few years conspired to interfere somewhat with the use of the camera in the summer months. Chief among these causes, in the view of the writer, is the increasing use of automobiles. The desire to own and operate an automobile is now almost universal, and so insistent that people will make almost any sacrifice to realize it. Other desires, even the desire to wear good clothes, are subordinated to it, and in fact must be in a large number of cases for it costs money to keep up the payments on a car, not to mention the little matter of maintenance. Besides this, there is the circumstance that a car and the various details associated with it absorb all the owner's spare time attention in many cases, so that even if interested in photography it is an effort for him to switch his mind and energies to it.

Then too, although invigorating and delightful, motoring has a tendency to induce a sort of indolent, sketchy emjoyment of scenery instead of the keener and more individual appreciation which one gets on foot or when using some humbler means of locomotion than the automobile. This cannot help discouraging the use of the camera, for no matter how beautiful or striking the scene, there is the recurring thought that it is only one of many and the next ten miles may present a dozen that are better from the photographic standpoint. Therefore why stop? In all this there is something of the attitude of the child in the baby carriage who likes the motion and makes a fuss when it ceases.

Yet all this, in the writer's estimation, has been merely a passing phase of American life, due primarily to the newness of the automobile. What Banquo said to Macbeth, "New honors come upon him, like our strange garments, cleave not to their mold but with the aid of use," applies pretty well to motorists and their like. Little by little, the automobile is fitting into its natural place in the scheme of things. People are getting adjusted to the expense factor, and at the same time, after some seasons of driving, do not regard motoring as so much an end in itself. Touring has become so commonplace that only very youthful or very new motorists glory in the amount of ground they can get over. The car is thought of more and more as a convenience and a comfort, and as this attitude grows it is inevitable that other interests should reassert their hold. As the car is extensively used already to get to places where fishing or hunting is good, so the new crop of amateur photographers is also using it to go on photographic excursions. It is inevitable that this should be so to an increasing degree.

As for photography in fall and winter, it is as true today as it ever was that the camera provides an incentive for staying out-of-doors, for getting exercise much needed and enjoyable if there is only an occasion for it. Besides, to one who has traveled in upholstered ease through a good part of the summer there is a certain zest to walking and tramping again in the brisk weather of the colder months. These are perhaps reasons for the renewed interest in photography perceptible this fall.

But it may very well be that we are merely experiencing another phase of the general readjustment, which brings photography, along with other wholesome interests, into a position where it is given more of the place it deserves. Certainly few occupations for one's leisure time are so profitable from every standpoint, and there is no occasion for surprise if this fact is becoming more generally recognized than it has been in the past.

READERS' CRITICISMS

BEST CRITICISM OF PRINT No. 32

Frankly, I do not care a great deal for this picture, but it is not without merits.

The figure is correctly placed, so as to be in the most emphatic position in the picture space. There is more space in front than behind the figure, and thus is conveyed the impression that the man can move forward without getting out of the picture.

Further emphasis is given the figure by the fact that the white shirt is the lightest tone in the picture, and that it is in close proximity to the shaded face, which is one of the deepest shadows. The hat and the overalls suggest that the subject is a real "dirt farmer"; they do not give the impression that they were donned for this special occasion. It would be my guess that the man is the actual proprietor of the field.

Moreover, there is a suggestion of movement —

not particularly strenuous movement, it may be, but having wielded a hoe myself in my young, callow, pre-photographic days, I can refer to my own experience, and I doubt me if my movement at 4.30 P .M. was any more strenuous than that suggested in Mr. Cask's picture.

Certainly it is no disparagement to any camera-user to suggest that so eminent an artist as Millet was more skilful in the matter of pictorial composition. In the "Man with the Hoe" a much larger portion of the picture space is occupied by the figure than is true in the picture of which this is my humble criticism. The surroundings are just barely sufficient to set off the figure. In "The Sower" this is equally true. Likewise, in "Feeding Her Birds," "The Gleaners," "The Angelus," and others. Nor do we need to depend on Millet alone for illustration of this principle. Consider Breton's "Song of the Lark," or "The Washerwoman," or Adair's "The Haymaker." I am assuming, of course, that Mr. Cask's picture is a "figure in landscape" not a "landscape with figure." I base my assumption on the fact that if we remove, or cover the figure, the landscape simply ain't.

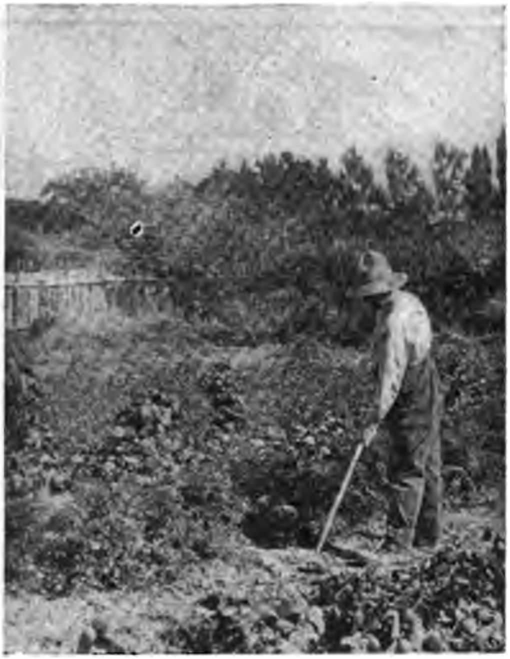
If this were a contest wherein competitors were asked to select a title for the picture, I am sure I should be the winner; I should suggest calling it "The Vacuum" because of the total lack of atmosphere. Granted that the air in Utah contains little moisture, which we depend upon for suggestion of mistiness, nevertheless, I fail to see the reason for using so small a stop as *f*:22, and thus rendering every plane with an equal degree of razor-edgeness.

There is little use for a doctor to diagnose diseases unless he can suggest remedies. In this case, my diagnosis having been made, I should suggest treatment as follows; cut the print from top to bottom squarely through the middle and cast the left-hand part into the outer darkness. Trim the remaining half at the top on a level with the skyline. Then with the remaining print as a model, take the picture again, giving sufficient exposure to eliminate the black-and-white hodge-podge surrounding the man with the hoe and adequately indicate the texture of the vegetation about him so that we can tell whether he is hoeing beans or cacti. Then I think he result will deserve unadulterated commendaion. — Bert Leach, Portsmouth, Ohio.

ANOTHER CRITICISM

Mr. Cask's "A Phase of Summer" is a type of rint which is usually vexing to the enthusiastic mateur. He wonders where the life and color have one that lured him into making the exposure, and ine times out of ten (until he learns better, and I peak from experience) he is prone to believe that omething went wrong with the developing or the rinting paper. It is hard for him to realize that he as fooled so completely before he made the exosure.

Color, more than anything else, misleads the amaeur into making unsatisfactory exposures. He forets that the silver screen is going to record color tensities in black and white — and not truthfully t that. The reds which are so visually powerful arcely affect the emulsion at all, while the brilliant lues and violets bore deep into the silver and prouce white. Put on a pair of dark blue glasses and ok at some of the brilliant scenes which appear to vite exposure. What a difference!



Criticism Print No. 32

A PHASE OF SUMMER Ronald E. Cask

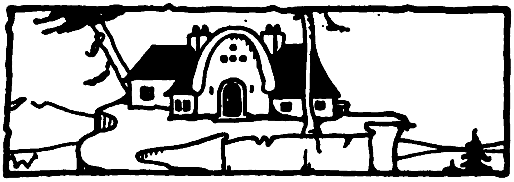
In this picture we are fully aware of the man with the hoe, but we experience a certain displeasure in finding him in the flat and uninteresting mass of detail which here abounds. When the sun is high, landscape views are apt to suffer from this flat, lifeless tone. It is caused by the myriad of high-lights and the absence of long shadows. Only by picturesque mass arrangement, atmospheric quality and skilful maneuvering can we hope to secure worth-while results with a high sun. As evinced by the title, the man in this genre was supposed to be subordinate to his surroundings; no doubt, in the colorful scene presented to the eye, he was. But now we find him too near the border because he has become the main point of interest. Furthermore, his attitude, though natural enough, appears stiff and posey because the attention is repeatedly driven to him for sheer relief from the monotonous, dust-colored foliage.

As far as technical work is concerned I believe Mr. Cask made the best of his exposure: — George A. Beane, Jr.

NEW CRITICISM PRINT NO. 35

The only information supplied with Criticism Print No. 35 is that the picture was made in the spring with a 4 x 5 plate camera. The print is a sepia on P. O. P.

For the best criticism of this print by any reader submitted by December 15, a credit of $2.00 towards books of our publication will be awarded. Address the Readers' Criticism Editor, and please write on one side of the paper only.



THE QUESTION BOX

WINNING ANSWER TO AUGUST QUESTION

How has proficiency with the camera proved of assistance to you in your profession or vocation?

FOREWORD — This question brought some very fine answers, and it was difficult to decide between the two which head the list. We believe that both Mr. Doolan and Mr. Smith will recognize this fact, although they are occupied in ways so different. The answers are just another illustration of the universal appeal of the camera and its power to enrich the individual life.

The winning answer:

John Richard Green, the English historian, when asked "What do you think the greatest boon conferred on the poorer classes in late years?" answered at once, "The six-penny photograph." This doubtless because we find them on all walls of all homes, and nothing can buy away these likenesses of "the scenes of my childhood" and of those "loved and lost a while." One picture of my sainted mother — the only one made of her in the last score years of her life — richly repays me for all the time, trouble, and expense photography ever cost me. Only lately I was appealed to almost frantically by a mother for a print of a snapshot which I made of her three-year-old — not long before the little one was snatched forever from her earthly sight. Fortunately, I had preserved the negative.

And when I look over the many excellent negatives and prints I have of family and friends and views of visits and trips, besides the increasing skill in "bringing home the bacon" for others' pleasure as well as my own, — all this affords satisfaction which isn't on the market at all. For instance, one of America's greatest railroad presidents spent his boyhood days in an old cabin home near here. When I discovered that fact, I hunted up the scene, made a good picture of it, and sent it to him with my compliments, — also with the result that I now have a letter in which he plans an early visit to the old home, and incidentally to my home too.

Although only an amateur (and "amateur" means "lover," you know) and not the least a photographer for revenue only, I am able to cash in a great deal of my work. At the recent dedication of the several million dollar U. S. Hospital for soldiers at Dawson Springs, Ky. (in this county), my 5 x 7 Seneca View camera attracted the attention of more than one firm of building contractors, and brought unsolicited orders for pictures which went a long way towards paying for the outfit. Again and again do I have calls for flashlight and other pictures of graduating classes, wedding parties, picnics, all of which offer my own price for the work.

My chief reason for first taking up photography, some five or six years ago, did however have its end in utility. In the educational work of my congregation (I am pastor of a thousand-member flock), I knew full well that eye-gate is the openest of all the entrances to the city of Mansoul. So I have always used a great many stereopticon slides of missionaries, mission-field views, illustrated hymns, educational diagrams, building plans, statistical tables, and such like. But these are always expensive to buy or even rent, not to speak of the time lost in attempting to secure them. In many, yes most, cases, such slides as I wished were not to be had in any open market at all.

For example, just after the sudden death of our best-loved mission secretary, I wished to hold a memorial service in his honor. To enhance the effectiveness of that service, especially with younger folk, I wished a good slide picture of him. Though I had a good photo of him, I could not possibly "send off" and have the slide delivered to me by the following Wednesday evening. And occurrences somewhat like this were recurring constantly. So it was make my own slides or "forever after hold my peace" so far as getting them on time, and just what I wanted, was concerned. At last I cut the Gordian knot by buying a small slide-making outfit, and now I own thousands of slides on the lines I am working in, and am adding them constantly, and all at a very low cost. Here endeth the first chapter of my photographic history.

But it ends with "to be continued in our next". If slides, why not outdoor views, and that called for an Eastman Kodak, 3A Special, and later an Ansco Vest Pocket Speedex No. 3. And why not the difficult speed pictures for which I had not a few commercial calls, therefore the Telescopic Revolving Back 4 x 5 Graflex. Then why not enlarge many of the choicest bits, and therefore an Eastman Enlarging Outfit. And why not tint and tinting-border and vignette, and — "the tale is yet to run." With a good darkroom at home, many an evening hour, after services or on "off" evenings, is spent in the most pleasant and profitable, restful and recreative diversion I have known.

Finally, since anything that is worth doing at all is worth doing right, why not subscribe for AMERICAN PHOTOGRAPHY, and some other such good magazines, just as I have done now for several years. Q. E. D. — (Rev.) LEONARD W. DOOLAN

OTHER ANSWERS

During the period of my photographic activity, which covers the last five years, I have been engaged in the operating end of the crude oil business. My work has been superintending the drilling of oil wells and looking after the financial end of the business. Hence as a rule I was spending money in pretty large sums for people not on the ground, but greatly interested in the progress of the work. I have found that a photographic record, supplementing written reports, has been of the greatest value in enabling me to make myself clearly understood. Pictures not only of the well being drilled seemed appreciated, but there was always interest in pictures of nearby development which might affect the value of the property we were operating. In some cases these pictures have materially helped in the sale of properties — at least in inducing prospective buyers to examine personally. No amount of oratory is as convincing as a photograph of a well actually producing oil.

I attribute the financial backing I have had from a prominent and very wealthy oil operator to have resulted indirectly from my interest in photography, as our friendship contered in the beginning around

New Criticism Print No. 35

this common hobby, and I doubt if we would ever have had any business relations had we not been brought together in this way, and through photography kept in touch with each other when we naturally would have drifted apart.

In my field work I have used almost exclusively an Auto Graflex Junior and then enlarged either with a Daylight Box or Illuminator (using the camera as a lantern) to about 5 x 7. I carry a sufficient outfit with me to do this work and have found little difficulty in managing the work even when there was no running water or electric lights. In such places I find a closet for a darkroom and enlarge with the box. I might send off my work to a finisher (and have sometimes done so) but as a rule want the pictures immediately and cannot wait, as I am always in some small place so it would be necessary to mail the work to a distant point, involving perhaps a week's delay for enlargements.

While I know that photography has been of some financial benefit to me — offsetting what I have spent on it many times I am sure — yet the interest it has added to life and the mental stimulus which I have had from reading both magazines and books on the subject, the study of the history of art to which I have been led by pictorial aspiration, and the pleasure that I have had in trying to learn how to make good pictures, far outweigh any financial consideration. — Edwards H. Smith.

Proficiency with the camera has proved of assistance to me in my profession through its luring me into rising early while on the road that I might not lose subjects far out in the country. Thus my health has been improved, and in consequence my work as a vaudeville actor, greatly enhanced.

I continually get before booking managers, photos of our billing or some event of particular interest to men in their positions, which advertise us more effectually and far less expensively than any trade paper display.

Novel pictures of our act which would not have been obtained unless I had had my camera, have been the cause of much publicity that money couldn't buy, and have furnished us with pictures for lobby display out of the ordinary that are always desired by the resident managers, adding to our value in their eyes.

My camera has brought me in personal contact with theatrical managers of note in snapping them during their tours of inspection of circuits, which acquaintance was later broadened with beneficial business results.

My Speed Graphic has kept our light from being hidden under a bushel. Talent in show business often falls by the wayside through lack of advertising. My camera has, in a very, very great way, kept managers, booking managers, actors, and the public from saying, "I never heard of them," when our names were mentioned.

While this letter is written purely through my love of photography and my interest in its advancement, I want to point to the fact that even this letter, if published, will be an advertisement which we never would have gotten if I had no interest in cameras. — Wm. A. Mahoney.

I am a high-school boy and do not know if you would consider going to school as my vocation. If you do, it may interest you to know how my camera has aided me. It is a custom in several classes in the school to publish a magazine at the end of the year, composed of class notes, jokes, and achievements. In civics I am not a shining light, but grasped opportunity by the hand when it knocked in the form of a magazine. I noted the subjects that were given out and later took my camera and made several exposures on some of the subjects. Although there were several difficult pictures among these, all the exposures were good. When I showed them to the teacher he said little, but told me to do as much of that kind of work as I could. When the magazine was completed, all the photographs in it were mine, and incidentally, almost all the illustrations. The pictures raised my mark for that month ten per cent and gave me some pocket-money as well, for the teacher ordered prints for himself and several friends. The same thing was done in several other classes, also. Working outside of school hours my camera has helped me also. I was in a battery shop for a short while. One afternoon in dull times I took some pictures for my own interest. When I showed them to the owner he borrowed them to use in an "ad" he was going to put in the paper. As a result, other business men have requested me to take pictures of their places. These pictures brought me both friends and pocket-money. When a camera aids me this way, who can question my wasting (?) money taking pictures. — Frank Stratton

NOVEMBER QUESTION FOR READERS

What points are especially helpful to keep in mind in constructing and locating a daylight enlarger?

For the best answer to this question received from any reader by December 15 a credit of $2.00 towards books of our publication will be awarded. Address the Question Box Editor, and write any other communication on a separate sheet of paper.

OUR COMPETITIONS

LITERARY COMPETITION

It has been our annual custom to hold a literary competition, and as this has brought us in the past a number of practical articles, we are repeating our offer this year. For the best article on a photographic subject, whether technical or inspirational, submitted to us before November 15th, we offer a prize of $35.00. We will purchase any other articles submitted which we can use, and we have usually bought about half the articles sent in. The manuscripts must be typewritten, illustrations should be kept to the minimum and diagrams should be drawn in ink neatly enough to be reproduced.

OUR ANNUAL COMPETITION

We publish in the advertisings pages of the current issue formal notice of the conditions of our Third Annual Competition in which as usual cash prizes amounting to three hundred dollars and honorable mentions of lesser value are to be awarded. We hope that our readers will be liberal in the selection of their best prints for entry in this competition, for we expect to continue the practice of the past two years and send the prize-winning print and a substantial number of the honorable mention prints on a tour of camera clubs throughout the United States. We feel, and have had our opinion confirmed by competent critics, that the standard of the collections exhibited as a result of this competition in the last two years has been very high and that these exhibitions have given pictorialists and lovers of art in many places throughout the United States the opportunity to see a really representative collection of modern photography which, if it did not attain the standard of one of the international salons, still included enough work of salon standard and by salon exhibitors to show pictorialists what is regarded by judges and juries as high class modern photographic work.

We would like to reproduce here a few of the gre number of enthusiastic letters which have been se us by those who have seen these shows, telling wh has been their effect on their community and th enthusiasm which has been aroused by them. seems to us that the help which has been given pictorialists in the smaller towns by seeing these pictures has been sufficiently great to justify us asking salon exhibitors to send us prints of sal quality for inclusion in the next competition an exhibition.

The 1922 prints were, or will be before Decembe first, exhibited in the following places: New Yo City; State College, Pa.; Wilkes-Barre, Pa.; W cester, Mass; Boston, Mass.; Portland, Me Oakland, Cal.; San Diego, Cal.; San Francisco, Ca and Sacramento, Cal. Thus it will be seen that photographers from coast to coast have seen these pictures and we hope to arrange a similar schedule nex year. If our friends of the camera clubs who wou like to see this exhibition will let us hear from the at an early date, we will endeavor to work out schedule which will cover as many places as possi We would suggest that two weeks be the maximu time for exhibition, as it is necessary to allow on th average a week or more between exhibitions.

SENIOR COMPETITION

The first prize in the September senior competition was awarded to Stefano Bricarelli for his interesting picture of a religious procession in an Ital village (Procession au Village.) This picture te its own story. It is effective in grouping and lighting and in its power to convey to the beholder sense of the earnestness with which these peasa carry out the details of their religious observanc It was made in the little town of Oulx in the C tian Alps in Northern Italy. The Suter 9 x 12 c camera was fitted with a Suter anastigmat of cm focal length. The exposure at 11.30 A. M August, in bright light, was 1-50 of a second wi 2-time filter at f:6.8. The Tensi Ortho Anti plate was developed in glycin and enlarged Gevaert Orthobrom. Page 689.

The second prize was awarded to Clark H. Ru for "Psyche." This is a pleasing outdoor study child and is not only pleasing because of the cha face and beautiful figure of the little model, but because of the attractive placing of the figure in space. The background is pleasantly subordina though possibly the light patches at the right might be darkened a bit with advantage. M with a 4 x 5 R. B Tele. Graflex equipped with a inch Cooke 2a lens. The exposure, at 3 P M July in Pennsylvania, was 1-10 second at f:3.5. the sun shining through the trees. The Grafle film was developed in a tank in metol-hydroch and enlarged on Eastman Portrait Bromide E Ro Matt. Page 701.

The third prize was awarded to Juventino Oca for "Timidity." This is one of a series of deer photographs sent in and Mr. Ocampo explains their production as follows: While finishing some rolls of for his friends, he found some snapshots of a b feeding a deer. He discovered who the owner and found that there were two fawns in addi to the adult deer. He visited the owner's home found the deer living in a spacious and wooded together with chickens, turkeys and other ani It was not difficult to find a suitable backgroun the result was a series of very interesting pr

We liked the one reproduced the best, because of the ethereal lightness of the fawn outlined against the dark background, and the interesting pose of the animal. The light in the foreground is entirely too strong and if this were greatly subdued it would bring out the deer in more relief against the dark background of the shrubbery. The picture was taken in Pachuca, Hgo., Mexico, with a Press Graflex camera fitted with an f:4.5 10-inch Zeiss Tessar lens. The exposure, which was not given, was evidently very short. The Premo film pack was developed in pyro and printed on Artura Iris C. Page 693.

Honorable Mentions were awarded as follows:—

Clematis	R. L. Coffin
Cave Man	J. H. Field
Spring Landscape	C. M. Harris
Where the Daisies Bloom	J. T. Johnston
Pietro — A Guide	Earl W. Tetzloff
Quietude	James Thomson

Commendations were awarded as follows:—

Home Portrait	R. B. Archey
An October Landscape	Lawrence Baker
An Outdoor Portrait	F. E. Bronson
In the City's Vast Throng	Edwin B. Collins
Summer's Fading Glory	John N. Consdorf
A Long Island Homestead	Wm. S. Davis
The Fairy of the Dunes	Josef Froula
Morning Reflections	W. D. Goodwin
Afternoon	Herbert J. Harper
St. Peters	Margaret S. Hitchcock
In an August Garden	Harry E. Horrigan
Entrance	Jiro Ito
Standing by the Leader	J. W. Jeffers
Crossing the Brook	E. Everett Jones
Phyllis at Stone Harbor	W. Kitchen
Bobbie	Leo Kraft
Ouch!	Dr. E. L. H. McGinnis
Hawks' Nest Mountain	Geo. Miller, Jr.
Dobb's Ferry on the Hudson	Lyle A. Morse
Evening Low Ebb	Goro Niwa
Summer Sport	H. B. Rudolph
A Little Gleaner	J. H. Saunders
Madison Square	G. W. Schinkel
On the River Bank	J. A. Singler
Study Fantastic	M. L. Shattuck
Out-door Portrait	Mrs. S. S. Smith
Day Lily Bed	Edwards H. Smith
The Road to Somewhere	John C. Stick
Summer Morning Landscape	Paul M. Vanderbilt
The Top of the Hill	B. M. Whitlock

JUNIOR COMPETITION

The first prize in the September junior competition was awarded to Koji Hoshii for his study entitled "The Calm Water." Photographs of boats at wharves, with their reflections in more or less broken water, are common subjects of photography. This does not differ materially in arrangement from hundreds of such prints which pass through our hands in the course of a year. Its strongest feature is the way in which the single boat in the dominant position is accentuated by the prevailing lighting. Evidently some objects to the left cast a shadow over most of the boats and the brightly illuminated white paint of this launch gives the accent which makes the picture. The reflection of the single mast is just enough to break up the foreground and this feature alone is strong enough to balance the almost monotone mass of the boats in the upper right hand corner of the picture. A subject such as this must be trimmed exactly right or it fails of its effect. This was made in Seattle, Washington, with a 3¼ x 4¼ Ensign Reflex camera fitted with a 9½ inch Wollensak Verito lens. The exposure was 1-25 second at 7 A. M. in August in bright light. The Seed Orthonon plate was developed in amidol and enlarged on Eastman Bromide No. 7. Page 695.

The second prize was awarded to J. B. Gale for "Where the Hills are High and the Trout are Large," a picture also made in the State of Washington, but, instead of being a city scene, this was taken in the mountain fastnesses of Whatcom county. It needs no criticism. The river, the rocks, the trees and the mountains form a background which is as picturesque as any can ever be and the introduction of the figure, while adding a human touch and perhaps focusing the attention on an important spot of the picture, is not entirely essential. The picture is eternal and would be there if the figure were eliminated. Made with a 2¼ x 3¼ Premo camera fitted with a 3½ inch Kodak anastigmat. The exposure in hazy light at 9 A. M. in August, was 1-25 second at f:7.7. The Premo film pack was developed in a tank in pyro and enlarged on Cyko No. 5, tone in a hypo alum bath. Page 691.

Honorable mentions were awarded as follows:

Photographical Study	John H. Becker
Solitude	Herbert Coates
Sonny	Theo. M. Fisher
Winter Landscape	Mrs. C. H. Johnston
Landscape	C. B. Rosher
Mother and Child	Warwick A. Sullivan
Defiance	Otho Webb

Commendations were awarded as follows:—

Old Hickory	Wm. E. Barr
Stony Point	Ralph Beebe
Outdoor Portrait	Carl W. Beese
Cloud Beauty	John H. D. Blanke
Nature's Gift and the Craft of Mankind	Ralph B. Bonwit
Summer Landscape	H. J. Brennan
Halcyon Days	John Brent
The Curiosity of Youth	E. M. Bruce
At the Market Door	Franklin Chapman
A Cozy Corner	P. N. Dean
Breaking In	Wm. Delano
Merrymeeting Bay	Herbert L. Douglas
Natural Cork-Screw Cocoanut Tree	Herb. O. Egan
Dogwood	E. A. Ellsworth
Happy Days	Jas. H. Grime
The Old Indian Trail	Geo. E. Hansen
Springtime	Wm. M. Henghan
Shady Brook	I. Higo
The Open Door	Mrs. E. C. Hildebrand
Explaining	W. Keibel
The Canal—Winter	Wm. B. Kemp
Road from Indian Hill	Jas. B. Kent
Hollenbeck Park	C. M. Kirk
The Japanese Birch	I. Komamiya
Rhododendrons	W. W. Kuntz
My Goat	Th. L. Lim
Kodak as you Hoe	Wm. Ludlum
Woodchuck	H. J. Mahlenbrock
Mollie Ann Brook	S. Mitchell
After the Rain	Taro Miyake
High Tide	Miss Lydia Mosher
The Swimming Hole	J. Herbert Neill

Nude Study	[illegible] Newton
The Old-Fashioned Well Sweep	[illegible] Newton
Morning Mist on the Susquehanna	[illegible]
[illegible]	[illegible] Rainey
Sunset on the Delaware	[illegible] Rogers
A Quiet Summer Day	[illegible]
[illegible]	[illegible] Schneider
One St. Winter Night	[illegible] Stone
Art Museum	[illegible]
Reflections	[illegible]
The [illegible]	[illegible]
Among the Birches	[illegible] Tomlinson
[illegible]	[illegible]
Through the Pasture Gate	[illegible] Webster
Home	[illegible] Williams
Through the Bridge	[illegible]

ROLL OF HONOR

FIRST PRIZE

[illegible]	[illegible]

SECOND PRIZE

[illegible]	Alexander [illegible]
[illegible]	[illegible]

THIRD PRIZE

[illegible]	[illegible]
[illegible]	[illegible]

HONORABLE MENTION [illegible]

[illegible]

[illegible] E. Webster	A. A. Tomlinson
[illegible]	Harold E. [illegible]
[illegible]	[illegible]
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OUR ILLUSTRATIONS

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careful study of illumination these lines have lost **their** power to offend and form interesting elements of a homogeneous composition. The strong patch of light is well adapted to emphasize the strength and majesty of the tree trunk and at the same time has force enough to take the attention away from the tree trunk and prevent it from overmastering the rest of the composition. Page 699.

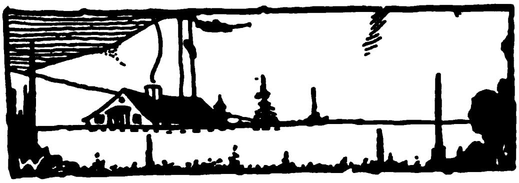
William D. Spear's print entitled "Arch, Blair Hall," is a fine piece of architectural photography. The beauty of the arch is well brought out and yet the vista through it is more important than the arch itself. The eye is carried through the picture most pleasantly to the remote distance. Page 703.

"A Spanish Lady," by Holmes I Mettee, is a piece of genre portraiture which seems to fulfill all the requirements for such work. The costume seems correct, the face and hair in character with the costume. The pose is proud and graceful, the fan completes the picture and breaks the background effectively. The tone-areas make an excellently balanced composition. Made with a 4 x 5 Graflex camera fitted with a 9-inch Wollensak Verito lens. The exposure was 10 seconds at *f*:5 by artificial light. The Orthonon plate was developed in pyro and the print was made on Artura Carbon Black Grade E Buff, developed with amidol. Page 709.

"The Old Mill," by Karl Suchy, is a picturesque spot pleasantly rendered. Made with a 9 x 12 cm camera fitted with a 5¼ inch Zeiss Tessar lens. The exposure in Austria at 4 P. M. in June in bright light was 1-15 second at *f*:11 with a 2-times filter. The film was developed in metol-hydrochinon and the print is a bromoil Page 711.

"The Fortune Teller," by Charles H. Kragh, is an interesting indoor genre made in Shanghai, China. The placing of the figures is interesting and the spots make a pleasing pattern. Made with a 3¼ x 4¼ Adams Reflex camera fitted with a Goerz Dagor lens of 6 inches' focal length. The exposure, at 11 A. M. in March with good light, was 1-8 second at *f*:6 8. The Ilford Zenith plate was developed in pyro-soda and enlarged on Kodak Royal Cream Bromide Rough, sulphide toned. Page 713.

"Truants," by N. P. Moerdyke, well displays the fascination of the waterside for the youthful mind. These children have the true truant spirit and their interest in doing nothing when they should be elsewhere is well portrayed. Page 715.



NOTES AND NEWS

KINO-TASCHENBUCH, by Hans Schmidt. Price $1.00.

PHOTOGRAPHISCHES HILFSBUCH FUR ERNSTE ARBEIT, by Hans Schmidt. Price $1.50. Published by Union Deutsche Verlagsgesellschaft, Berlin.

The first of these little books is, as its title implies, a pocket book to cinematography, and comprises a series of brief pithy notes on the various apparatus, such as the camera, perforator, printer and projector, naturally confined solely to German types. Practical tips are also given in all other branches of the work, and one can glean many useful hints from its pages. For instance, to find the point to focus on when both near and distant objects are required to be in focus, we have the simple formula:

$$D = \frac{2 \text{ x Near x Far}}{\text{Near} + \text{Far}}$$

In which D is the point to focus on. As an example suppose the nearest point is 3 yards away and the most distant object 8 yards, then 2 x 3 x 8 = 48; and 3 + 8 = 11. Then 48 ÷ 11 = 4 yds. 13 ins.

The fact that the second work is now in its fourth edition is proof that it has found favor among its German readers. As in the previous work, the various subjects are dealt with briefly. The subjects comprise cameras for various work, optical data, development, intensification and reduction, stereoscopy and panoramic photography. Positive processes are not dealt with. The section on lenses is particularly complete and includes all the latest forms; many new forms or modifications of old forms having appeared since the war.

Both books can be recommended as brief guides in their particular departments.

* * *

ABRIDGED SCIENTIFIC PUBLICATIONS FROM THE RESEARCH LABORATORY OF THE EASTMAN KODAK COMPANY. Vol. IV. 1919-1920.

The papers which are issued at intervals by the Kodak Research Laboratory usually appear in various technical journals, some of which do not usually come under the notice of the average photographic reader, therefore, an abridgment of the same issued in one volume is extremely useful, as one can judge as to whether the original paper is worth turning up, and this is facilitated by the statement as to where the original paper appeared. The scope of the subjects in this volume is fairly wide, ranging from a new non-intermittent sensitometer to the low visibility phase of protective coloration, which obviously deals with the efficiency of camouflage. The majority of the subjects are purely photographic as one would expect, and represent the latest advances in the science. To many, of course, some of the papers will be somewhat too mathematical, and while the volume is not intended for popular consumption, it is possible that digestion with a purely practical pepsin might be an advantage. In some cases this is carried out in the form of a summary, but in others it is not. Of course, the obvious answer is that the whole volume is no more than a summary, but we venture to think that even a summary of the summaries would increase its value.

In this volume also is included an index to the volumes so far issued, which is of considerable value, and the more so in that not only are the papers indexed under the author's names, but are also classified by subject and in numerical order with the name and date of the journal in which the originals appeared.

* * *

DIE FARBENLEHRE, by Wilhelm Ostwald. Unesma Verlag, Leipzig.

This work, which is to be completed in five volumes, is an exposition of the particular color system evolved by the author. The first volume deals with the mathetic theory; the second with the physical, the fourth, written by H. Podestà, with the physiological structure of the eye and the like theories of color formation. The third and fifth, which are not yet published, are to deal with the chemical and

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8. Printing Processes with Silver Salts
9. Printing Processes with Iron Salts
10. Printing Processes with Chromium Salts
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Appendix — Tables, Formulas and Useful Information.

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AMERICAN PHOTOGRAPHY

VOL. XVI BOSTON, MASS., DECEMBER, 1922 No. 12

CHILD PHOTOGRAPHY IN THE HOME

C. M. HARRIS

TO THOSE of us who are fathers or mothers, or even merely aunties or uncles, to small children, the fascination of the child has, in many cases, been the cause of our introduction to the delights of photography. The little darling who has so recently opened innocent eyes on the world, has gazed wondering into our faces, and the appealing helplessness of the rosy mite has caught hold of our heart-strings and set us wishing with all our souls to preserve some record of each epoch of childhood, so that when our children are children no longer, but men and women grown, we may still, in our declining years, see them as they were when they, and we, and all the world were young.

Photography is obviously the means to this end, and we enter upon it with high hopes and great expectations. At first our hopes seem doomed to disappointment; then follows a period when we are encouraged by an occasional success; and finally, if we persevere, we arrive at a point where success is only occasionally marred by failure.

Constantly in movement, the normal child is a difficult subject indeed, especially under trying light conditions, and since the majority of the most intimate phases of childhood — those for whose preservation we are most eager — are manifested within the home, we must, if we can, provide ourselves with a camera which will give us the greatest efficiency in a poor light with a restless subject. The camera which most satisfactorily fills these conditions is a reflecting camera with fast lens and focal-plane shutter. If we cannot afford the expense of such an instrument, we must make use of flashlight and window pictures, and be satisfied to limit ourselves by the limitations of simpler apparatus.

Only under ideal conditions can satisfactory pictures be obtained with a hand-camera in the home. Outdoors the user of the hand-camera is not quite so badly off, but the constant movement of an active child makes the problem of focusing a hard one, and the reflecting camera, with the facilities it offers for keeping the subject in exact focus right up to the moment of exposure, has tremendous advantages.

The chief aim of the photographer should be naturalness. No attempt at deliberate posing should be made. Very young children can be set in a well-lighted spot near the window. Should the sun be shining on the little sitter, a diffuser can be employed. I have found a piece of blue tracing-cloth stretched taut on a frame 36 inches square, made

THE PICTURE BOOK C. M. HARRIS

of 1 inch x 1 inch hardwood, very satisfactory, and it also gives very efficient service as a diffuser for flashlight. The frame should be fitted with a tripod socket, and it may then be used on a spare tripod. A reflector is a very useful accessory for lighting up the shadow side of the face. One can easily be improvised from a towel, sheet, or table-cloth hung over the back of a chair. It should be placed a short distance away from the child, on the shadow side, and slightly to the front. If the reflector is too close, the lighting will be unnatural; if too far away, it will have no appreciable effect on the shadows. It must be remembered, too, that the use of a reflector will also serve to cut down exposure.

Older children should be given some object to occupy their attention. They may be pictured very appropriately looking at a picture book, playing at doll's tea party, admiring new clothes they are wearing, playing with a favorite toy, seated in a miniature chair, or in any other way that the photographer feels to be characteristic of the child in question.

THE YOUNG VISITOR C. M. HARRIS

Care should be exercised in selecting a suitable background. A plain wall-paper or tinted wall will serve admirably, or if the walls are not sufficiently plain, playroom accessories may be used to distract attention from the pattern, and will give a "homey" and intimate effect. Care must be taken to exclude glaring highlights which would tend to distract attention from the subject. All objects allowed to appear in the picture should be of a nature appropriate to the child's occupation.

The much-vexed question of plates versus film is settled for us in advance, for the prime requisite for the kind of work we are now considering is speed, and the extreme speed obtainable in plates is twice as great as that of the fastest film. An exposure of 1-10th of a second will be found ample at *f*:4.5 on a Graflex plate in a well-lighted room.

While the developing formula recommended by the manufacturers for the Graflex

ON THE PARK LAKE

C

As soon as she saw m
my picture-taken!" a
"Later perhaps. Yc
you when I want yo
to see the picture, ai
playing. Then I wa
I must remember to
had been properly ta

Adolph Fritr

Vienna Camera Club

PHOTOGRAPHING CHILDREN

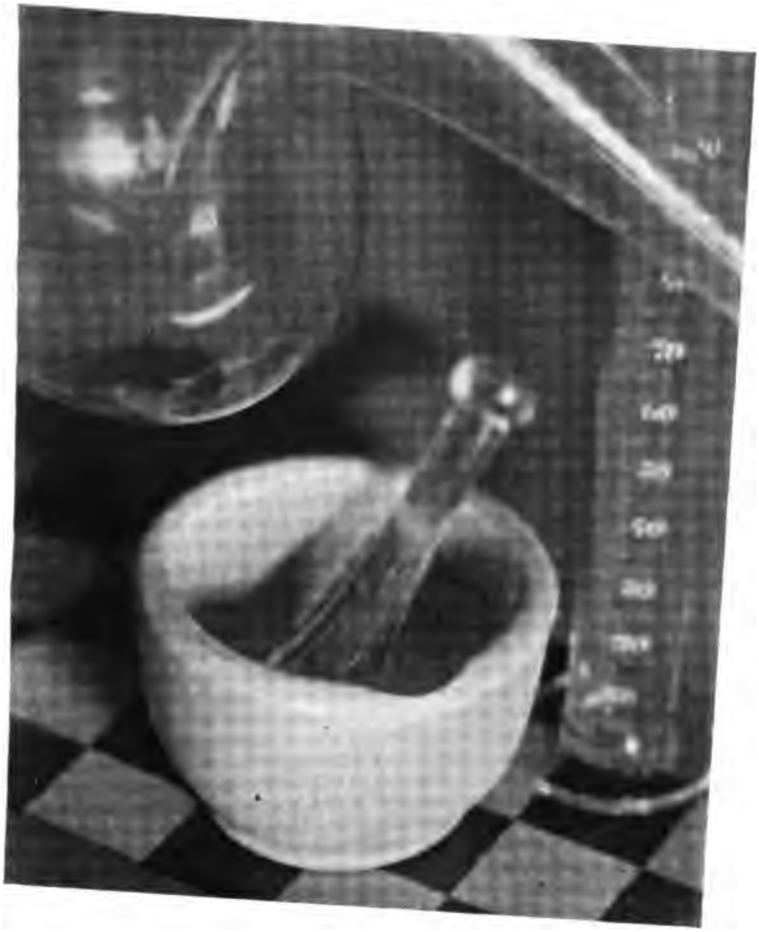
MARY HEATH

HILDREN present a special problem to the amateur photographer, but one well worth solving. Most children may be divided into two classes — those who like to have their pictures taken and those who don't! And they are about equally hard to manage. For if they enjoy being "taken" they pose the moment you appear with a camera, and if they object, much tact is necessary to overcome their reluctance.

My own small daughter belonged to the first class. If I wanted to "snap" her at her play, I had to be very diplomatic. with any kodak she would dance to meet me, crying, "Oh, oh, take d stiffen into a set pose at once. The only thing to do was to say, go on playing now, for I have to get the camera ready. I'll tell to look at me." And much patience was required, for she wanted it took a little time for her to forget me and really go back to her hed for just the right moment, and pressed the bulb. After which ay, "Look pleasant, please," or she would not feel that her picture en.

LANDSCAPE
Wm A. ALCOCK

CHEMISTRY
PAUL OUTERBRIDGE, JR



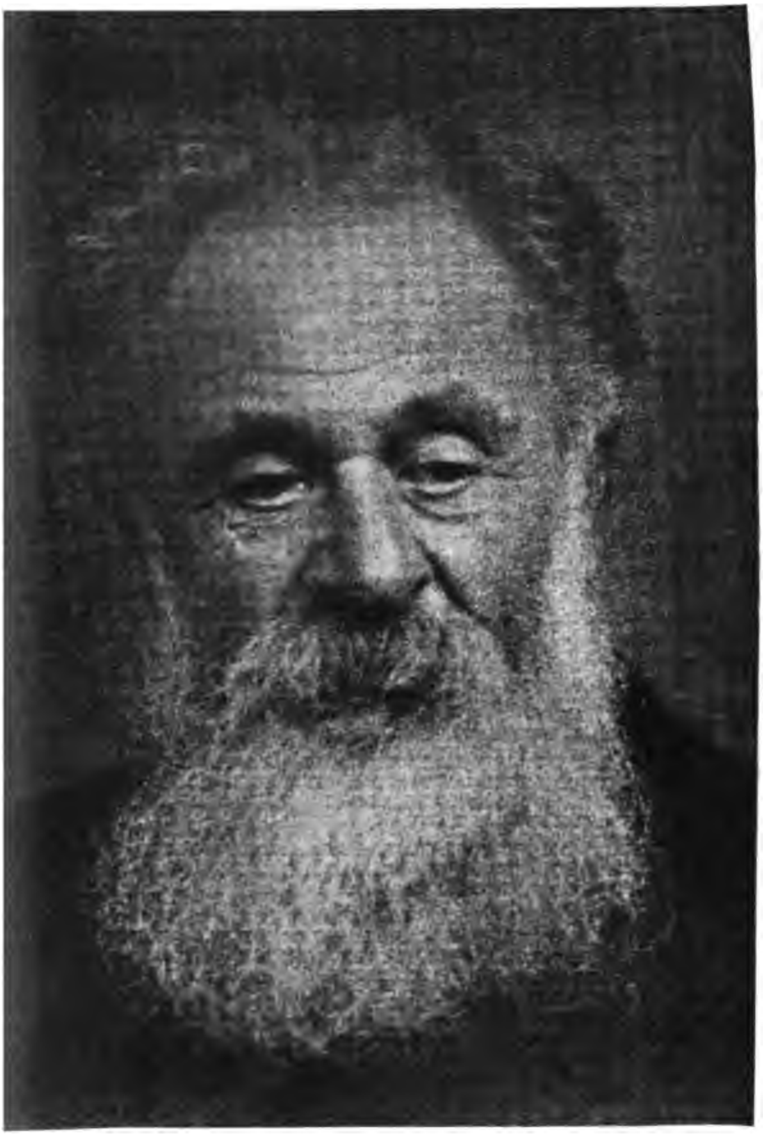
R.

INDUSTRY
J. R. Mason

UNTER DEN LAUBEN
BETTI MAUTNER
Vienna Camera Club

tough and strong, permi
ready mentioned, decreas
warm developers and de
possibility of rapid dryin
weather, it is quite advar
high as 75° without caus

Another objection to
fact that its keeping q
mould often forms on it,
bath recommended abo



ORTRAIT ANNIE HATSCHEK

Vienna Camera Club

itting rough handling, eliminating hot weather troubles as al-
sing the possibility of damage to the film, permitting the use of
evelopers with caustic or other strong alkali, and allowing the
ıg. As a preliminary bath to the use of Neol developer in warm
ıntageous, and the temperature of the Neol developer may be as
sing any trouble whatsoever.

o the regular phenosafranin bath as usually recommended, is the
ıuality after once being used, is not very good, as considerable
:, necessitating filtering before further use, but with the formalin
ıve, the keeping quality is very good, and this may be used over

JOHN WALLACE GILLIES
JOHN WALLACE GILLIES

S

FRIVOLITY

the camera. He has even writte
foolish enough to print. Pattern
has me convinced that this is righ
pattern. The answer is still obsc
art is a nut; it is all right to ban
good fun, and all that, but when
paintings and etchings, he thinks t
the quality of the hand wrought a
it; this conviction is firm, and th
him is torture.

LITY M. L. SHATTUCK

First Prize, October Senior Competition

ritten some stuff on the subject, which *Photo Miniature* was
tern is a necessity according to him; and about the time he
right, I see a lot of good pictures made without a vestige of
obscure. He thinks that anybody that calls photography an
bang around and make pictures with the camera, and very
hen it comes to trying to get some critic to class them with
ıks that is all wrong, and cannot be. The photograph lacks
ht article, and never will stand up as an art object alongside
d the result of years of struggle, mental struggle, which to

ROBERT DELAND

EARL W. TETZLAFF
Second Prize October Senior Comp

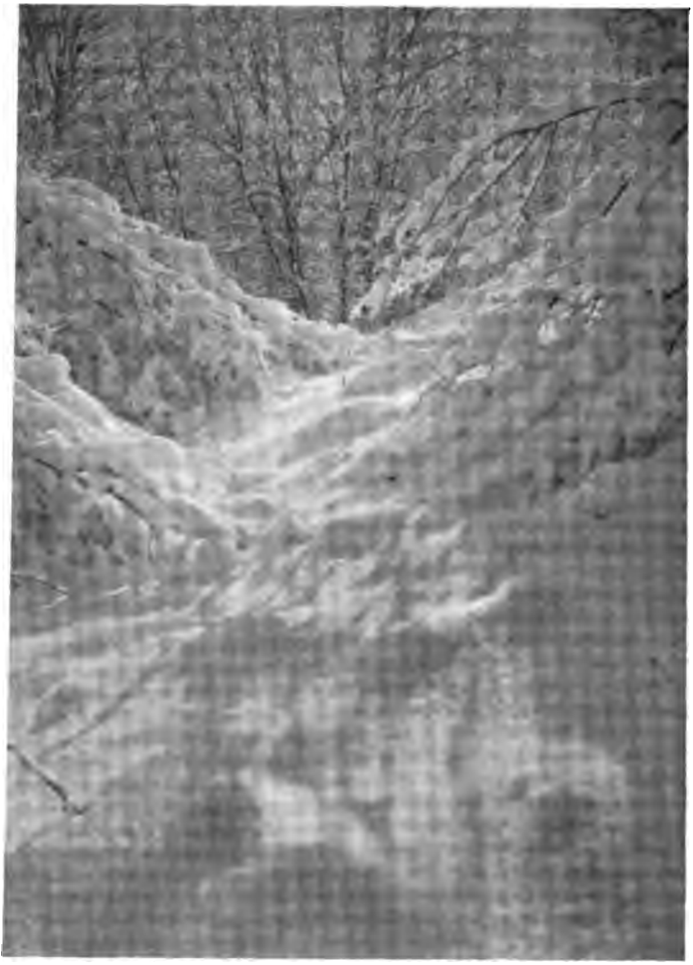
tition

the dish, and this can be easil
rubber hose be fastened to the
should not be turned on too fu
with the rise of the water.

As soon as the print has rec
not longer than 5 minutes in al
solution of sulphuric or hydroch
then a second acid bath should
washed with water.

Fine deep blue lines should
If there is a slight tint in the gr
laid face up on a glass or board
cotton dipped in the acid bath.
requires about 10 minutes washi

Corrections can be made, as



WINTER IN THE WELD WOODS ALEXANDER MURRAY
Third Prize, October Senior Competition

an be easily effected without wetting the back at all, if a length of
ned to the tap and its end placed well under the print. The water
l on too full at first, but gently so as to enable the print to float up
'ater.

int has received its preliminary washings, which may be fairly short,
utes in all, it can be lifted up and bodily immersed in a 10 per cent
r hydrochloric acid. If this acid bath, as it may do, becomes colored,
:h should be used for about 5 minutes, and the print then well

s should now show, if everything has gone right, on a white ground.
n the ground, which sometimes happens, then the print should be
'r board and gently swabbed with a brush or, better still, absorbent
:id bath. This at once clears off any tint. The print merely
:es washing and should then be hung up to dry.
made, as in the cyanotype process, with oxalate solution.

CHURCHYARD IN WINTER

This process is frequently
are subsequently used as negat
in England for sensitizing post
and it is an easy method of sen
THE INK PROCESS — The
ferric salt, its reduction to the
those parts protected from light
ink or gallate of iron. Ferric sa
while the ferrous combine but s
The difficulty of the process
to keep the whites pure, as the
with the ferrous salts in the pres
This process was originally
was compounded of ferric chlori
was the primary light-sensitive
turn reduced the ferric to the fe

Karl Suchy

Vienna Camera Club

uently used with thin translucent paper to prepare proofs, which
s negatives. The solution was for some time sold commercially
ng postcards, writing paper, etc., without the gelatine, however,
l of sensitizing paper.

— The basis of this process is again the light-sensitiveness of a
to the ferrous state and treatment of the ferric image, that is
m light, with gallic acid, with the consequent formation of a true
'erric salts at once give a black image with gallic acid or tannin,
e but slowly with these.

process is to obtain sufficient depth of color in the image and also
as there is great tendency for the gallic acid to form a gallate
the presence of atmospheric oxygen.

ginally suggested by Poitevin in 1859, and his sensitive mixture
chloride and uranium nitrate. Actually, here, the uranium salt
nsitive agent, as it was reduced to the uranous condition and in
the ferrous chloride.

As soon as the lines appear
possible, and then the surface blo
ency for the lines to run and beco
the paper are tinted more or less.
are wanting in depth and the fin
obtained by a thin coating of the
and drying of the developed print.

Mention has been made of th
it may be useful to some to point
the advantage of always being cl

The first is the Blanchard bru
early eighties. Blanchard was a
papers, and thus found the neces
than a strip of cloth tied to a shee
one will use an old negative glass,

A MODERN FLAPPER HOWARD F. LOUIS
Second Prize, October Junior Competition

As soon as the lines appear a full black, the print should be washed as rapidly as possible, and then the surface blotted off and rapidly dried, otherwise there is great tendency for the lines to run and become diffused. If the exposure is too short, the whites of the paper are tinted more or less. If on the other hand the insolation is too long, the lines are wanting in depth and the finer ones lost altogether. Successful prints can only be obtained by a thin coating of the sensitive mixture, correct exposure, and rapid washing and drying of the developed print.

Mention has been made of the necessity of using brushes not bound with metal, and it may be useful to some to point out how two excellent brushes may be made which have the advantage of always being clean and ready for use.

The first is the Blanchard brush, which was suggested by Valentine Blanchard in the early eighties. Blanchard was a well-known worker, who prepared his own printing papers, and thus found the necessity of devising a handy brush. This is nothing more than a strip of cloth tied to a sheet of glass, The glass may be any size, but naturally one will use an old negative glass, freed from its gelatine. It will be found convenient to keep the size not larger than 4 x 5 inches at the outside. The edges should be ground off with a file or stone, so that they will not cut the fingers or the binding.

The best material to use is well-washed Canton flannel, sometimes called swansdown. A good-sized piece should be thoroughly washed with soap and hot water to free it from the dressing, well rinsed in hot water and dried. This can be kept in stock. The cloth should be cut about one quarter of an inch narrower than the glass, as this prevents the ravelling out of the threads. The length of the brush is merely a matter of taste, but as a rule half an inch is enough, and then the cloth should be cut about 4 inches in width. The cloth is folded in two and the glass placed between the folds, leaving half an inch of the doubled cloth free beyond the edge of the glass. The cloth and glass are then bound together as tightly as possible with stout string. If the edges of the glass are not ground off the string will soon be cut through; but this trouble can be gotten over by wrapping a strip of celluloid over the edges.

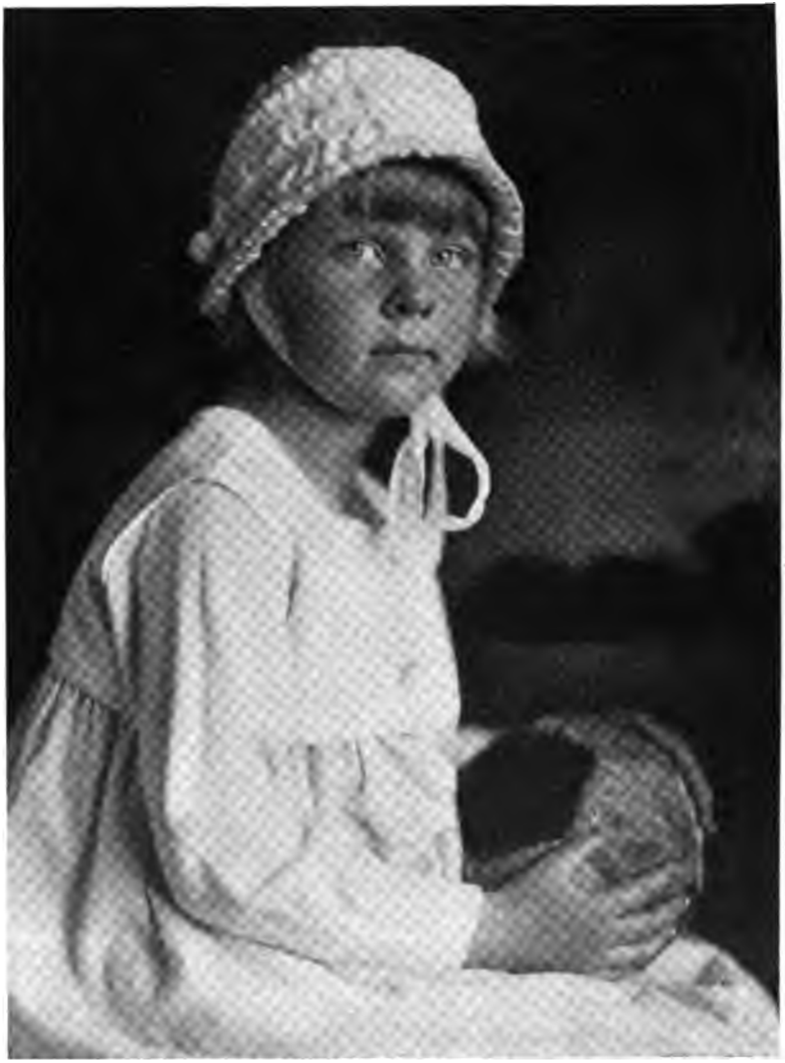
It is obvious that with such a brush the operation of coating even a large sheet of paper is comparatively easy, and very frequently one immersion of the brush in the sensitizer will be enough to coat a normal sheet, say 12 x 10 inches. The larger the sheet the larger may be the brush, that is to say, three quarters of an inch of free cloth may be used. In this case the cloth should be cut correspondingly wider, and a good rule is that there shall be from three to four times the length of the brush on the glass. For large sheets, 24 x 20 and so on, it has been found advantageous to use a piece of celluloid nearly the same size as the cloth, and to lay this inside the latter, and then fold without creasing sharply, and then tie on the glass. This gives a greater surface, as if the celluloid is thick, about 10-1000 of an inch, which can be obtained from any dealer, it forms a curve instead of a sharp fold and thus presents a greater surface to the paper. For such large brushes also it will be found better to use two glasses and clip the cloth and celluloid between them.

The advantage of this brush is that one can throw away the cloth, as soon as one has finished sensitizing; the glass can be scrubbed and a new brush made in a few minutes. For using this brush the sensitizer should be placed in a flat dish or household saucer, so that the whole length of the brush may be dipped in the liquid at once. But the cloth should not be dipped in as far as the glass, only till the latter nearly touches the solution.

The other brush is the Buckle. For this, one requires a piece of glass tubing, which may be of any internal bore and wall thickness; but as a rule half an inch bore will be quite large enough, particularly if the end be splayed out to a bell mouth. The length of the tubing is also immaterial; but 4 inches is ample.

A piece of string is doubled and passed through the tube and the end opened out to form a fair sized loop. In the latter is placed a tuft of absorbent cotton, so that the string is across the middle. Then if the string be pulled taut through the tube a very convenient brush is made, which can be thrown away as soon as done with.

The only disadvantage of the Buckle brush is that it is certain to leave individual fibers of the cotton on the surface, and the cheaper the cotton the more certain this is to occur. There are some absorbent cottons sold now, which are cheap and nasty, and utterly unsuitable for making this brush. They seem to be made from linters or the short fibers left adhering to the cotton seed after the longer staple fibers are removed. This stuff is hopeless, as it is impossible to make a brush that will last even for a small sheet, as it just falls apart into short fibers when in use.



PORTRAIT

MINYA DÜHRKOOP-DIEZ

SOME ADVANTAGES OF PROJECTION PRINTING

A. K. HANKS

A FEW notes on the advantages of projection printing from photographic negatives, of what we may term difficult subjects, will doubtless prove interesting and helpful to many workers.

It is generally conceded that photographing interiors, especially when working directly toward windows which are illuminated by sunlight, is perhaps as difficult as, if not more difficult than any other accomplishment in photography.

The four illustrations shown will give an excellent idea of what can be accomplished.

Print "A" shows a straight print without any manipulation from the negative, which gives a key to the exposure for the thin portions of the negative itself. This print was given five seconds exposure and was fully developed.

Print "B" gives an approximate idea of the exposure needed for the more dense portions of the negative and was given an exposure of forty-five seconds without any manipulation. This print, however, was underdeveloped and was in the developing solution not over twenty to twenty-five seconds.

Print "C" represents a first attempt at a manipulated print. The lower portion of the subject as well as that portion including the ceiling was given an exposure of seven seconds. The central portion, which includes the top of the table and the entire section occupied by the fireplace, was given twenty-five seconds and the windows were given additional individual exposures, but not sufficient for as good a result as could be obtained.

Print "D" shows what may be termed a very excellent print from this negative. The entire foreground portion including all of the heavy furniture at the lower right-hand and entire left-hand part of the view was given six seconds. The dark part of the ceiling was given five seconds. The central portion was given thirty seconds. The window at the right-hand side of the picture was given an additional *individual* exposure of thirty seconds, whereas the area of the windows to the left of the center was given an *additional* individual exposure of forty-five seconds.

The original prints are all 8 x 10 in size and the original negative 4 x 5 inches.

In order to accomplish this work but three items are necessary for practically all purposes. The first is one large piece of cardboard or heavy black paper at least twice the dimensions of the print to be made (both in length and height),with a small hole in the center about one inch in diameter. When printing in an item such as a window or any portion of the negative which is dense this hole can be moved so that the light will penetrate through it and in turn expose that portion for any degree of manipulation desired.

The other two items are two large pieces of card or heavy black paper which have a corner about one-fourth of the total area cut out. By holding one of these in each hand they can be adjusted so as to give any sized shape of rectangle or square for printing in different areas.

Exposing a large area of the negative at one time can be done by holding the two pieces of card together (or by using one large solid piece), raising or lowering for a short fraction of time. To expose such an area as the ceiling portion of the print shown, the card is lowered for a few seconds, then quickly raised. To expose the entire area

AN ADVENTURE IN THE PARK HAROLD C. ALLEY

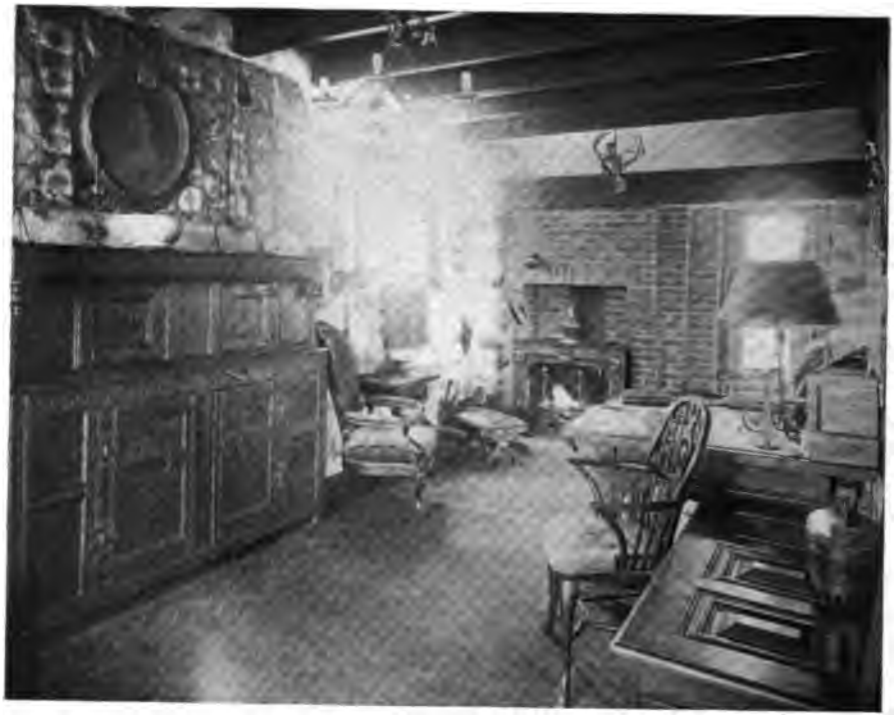
First Prize, October Junior Competition

covered by the furniture the card is raised diagonally across the entire area of the print to accomplish the result as already described.

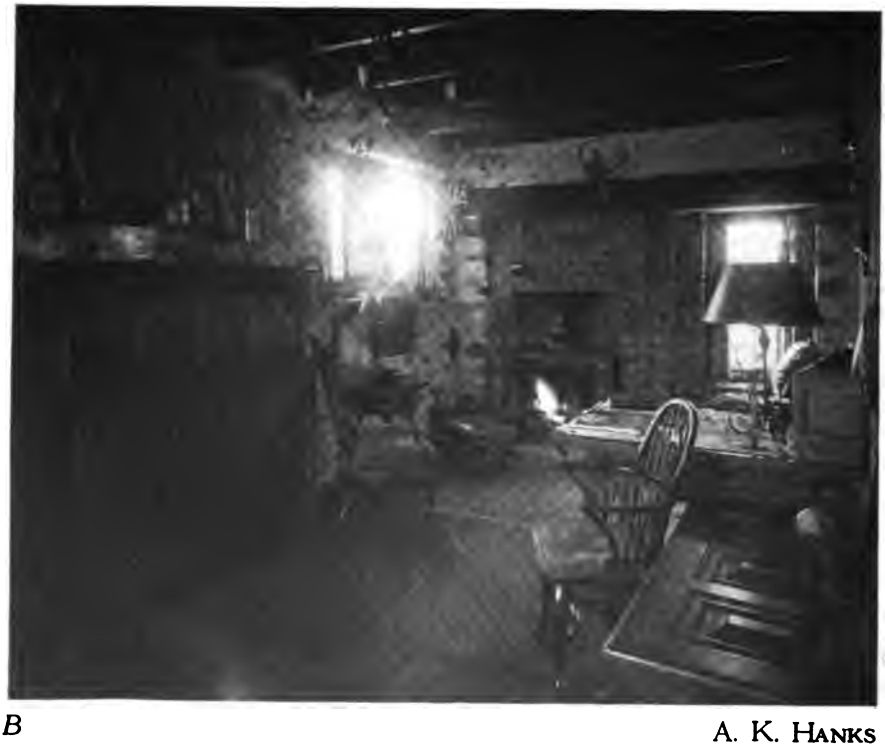
One will find that it is frequently a great advantage to expose the entire print by slowly lowering or raising, as the case may be, a solid sheet of black paper or card from top to bottom or from side to side in order to give a greater amount of exposure to the lower or other portion of the subject as may be required. This same manipulation can be varied to different degrees of speed so as to accomplish a wide range of results. The making of a good print from a photographic negative is not only most fascinating and interesting work, but calls for as much, if not even greater skill, than the actual making of the exposure and the development of the negative.

It has been my personal experience that a collection of 8 x 10 prints made on bromide paper from selected sections of small negatives gives the very best possible results to retain as a record, especially for compiling an album.

One of the greatest advantages aside from "manipulation" in making the print is the fact that one can use and select the *heart* of the composition of the original negative and use that portion only of the negative for the production of the print. It is very frequently



A A. K. Hanks



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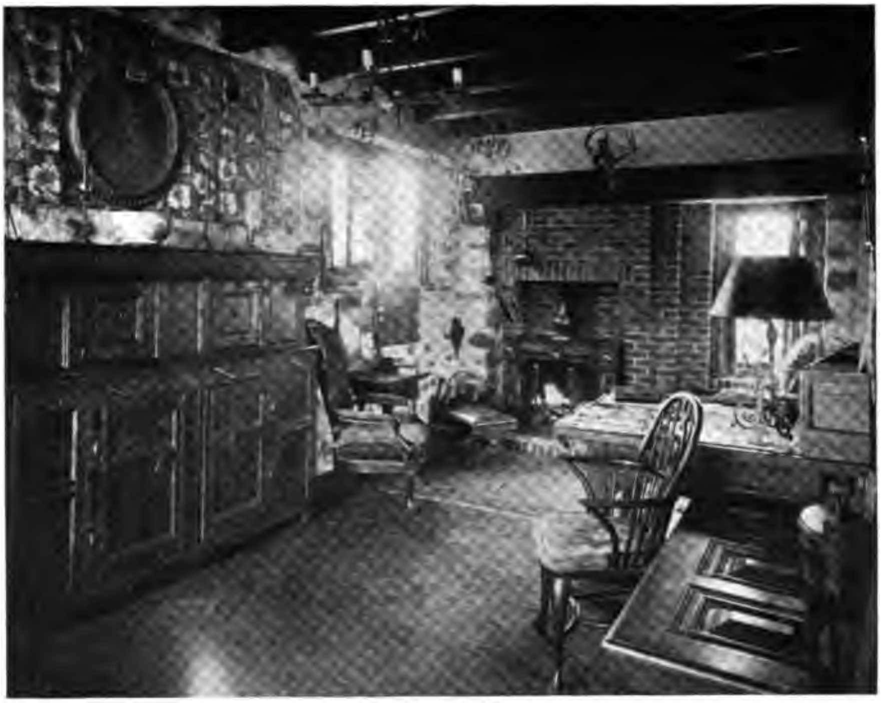
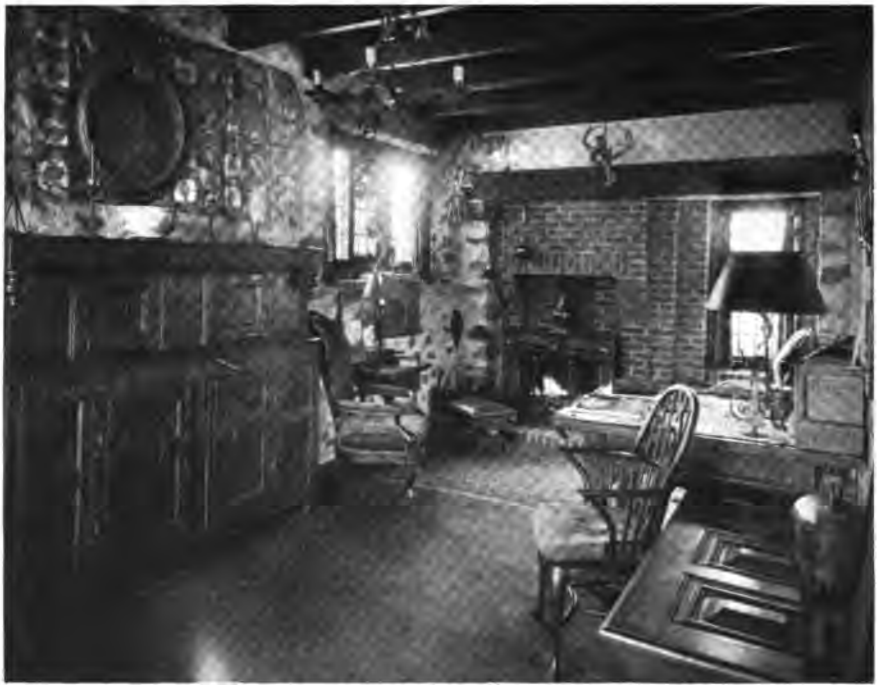


C A. K. HANKS



D **A. K. HANKS**

true that there is more or less uninteresting, or what might be termed, waste material to one side or to the top or the bottom of the original negative. It has been my experience that in over fifty per cent of the negatives which I make and consider worth printing, the original can be very materially improved from the standpoint of spacing and composition by making the print from a selected portion of the negative. It is fascinating to develop in one's own work the ability to select the "cream" of the picture, because of the fact that it so materially enhances the value and quality of the finished prints.

Again when making prints entirely by the "projection" method, the advantage of having large prints, usually 8 x 10, as a standard is so great that it needs no further comment. A collection of fifty to one hundred really excellent 8 x 10 prints is a greater joy to the owner and to show to one's friends than an album of several hundred contact prints, which of necessity will be of very miscellaneous quality.

It is especially true with negatives of portraits, made either indoors or outdoors, that the making of a contact proof on an ordinary printing-out paper is a very great help. In portrait work it is especially true that the negative may be of excellent technical quality but may be worthless because the expression of the subject is not satisfactory. Making a proof quickly shows this and also gives one the advantage of selecting the spacing and what to eliminate when making the large print by "projection" from those negatives which are worthy of printing.

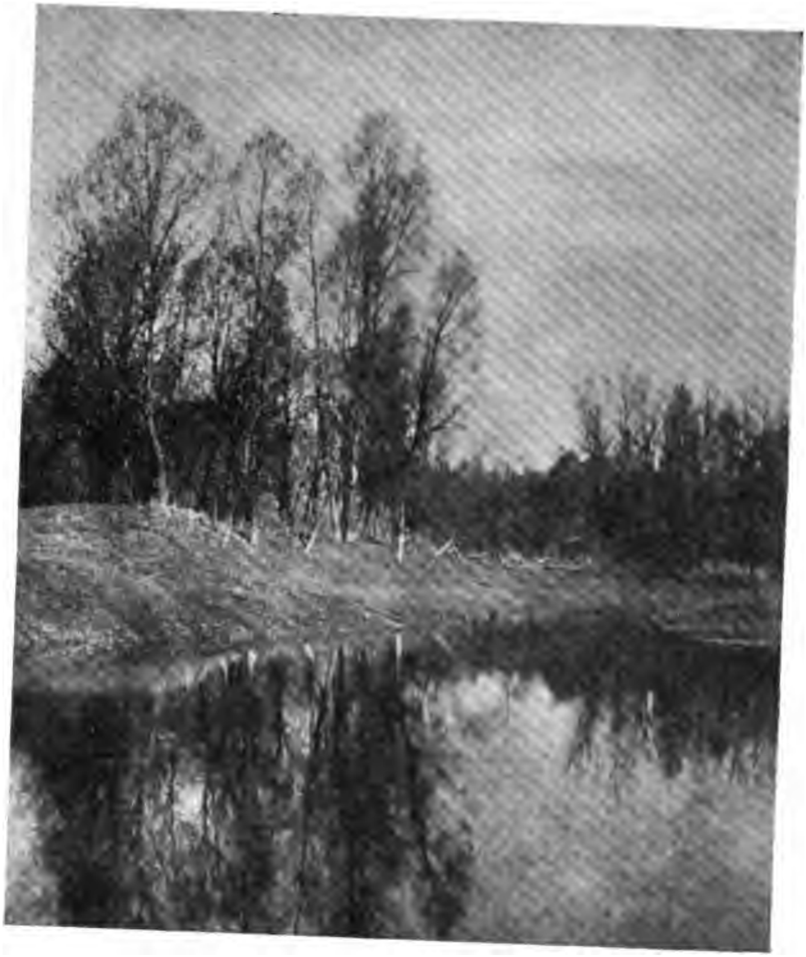
PHOTOGRAPHIC ENTHUSIASM

ARTHUR W. MOREAU

THE pages of this magazine contain monthly articles written especially for amateurs, which classification includes myself. Do you use these articles? Or do you do as I used to, read the magazine through and then place it in a nice comfortable place on the library table or in the bookcase? If you do the latter you are simply following the line of least resistance and, incidentally, missing a whole raft of ideas and helps which will keep your photographic enthusiasm at 100 per cent all the time. Let me tell you about the things I have put to the test and found to be all they were claimed to be.

Through the advertising columns (I use them also) I have exchanged no less than five cameras, receiving in each case some camera, lens or shutter I wanted for the equipment I exchanged. I have also purchased from many firms advertising photographic goods. Not once have I been disappointed with any deal; in fact, on two occasions I realized more than I expected on old equipment. I presume the firms I dealt with realized a profit also, or they would not be doing business. But that is sound business policy; every one must benefit, or the deal is not a success. I have yet to meet disappointment in shopping by mail through photographic advertisements.

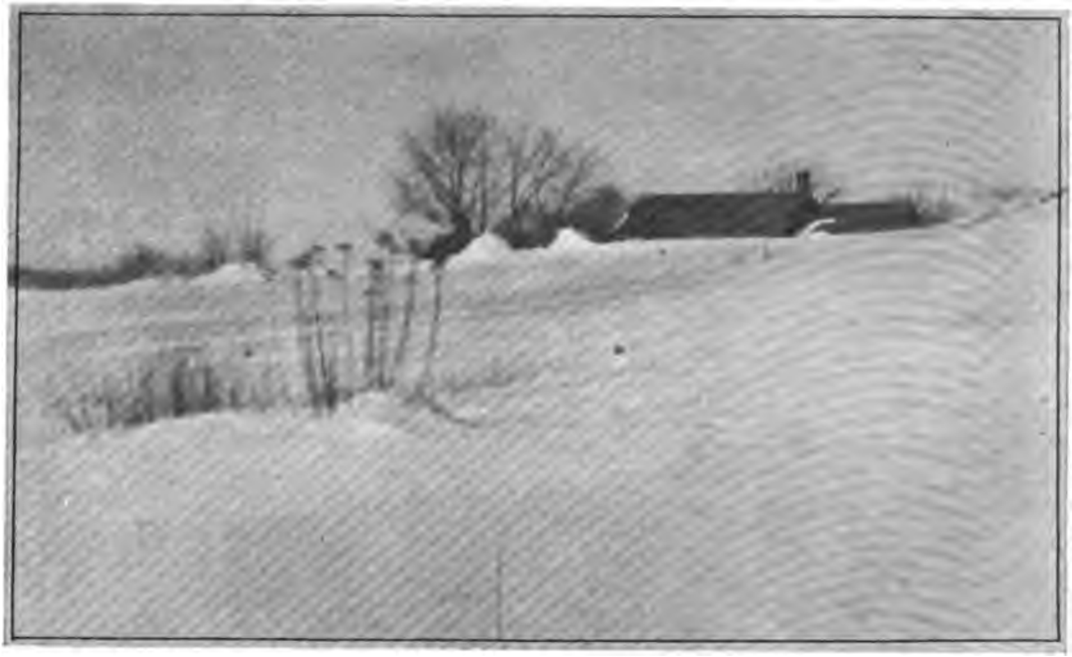
Repeatedly have I read articles favoring the tank method of developing. They were so numerous that I finally purchased a Thermo Developing Chart and a tank. I have given the tank method a very fair trial and the result is that I develop all my films in a tank. Lacking a tank for my 6½ x 9 cm plates, I develop these in a deep tray by the



MIRAGE

KARL SUCHY

Vienna Camera Club



WINTER WILLIAM J. WILSON

WINTER

Some of the delicate gradations in this picture probably will be lost in the half-tone reproduction, but even so, it will still be a picture that will attract instant notice because of its simplicity and good composition. The dark mass of the roof is well placed in the picture space and forms a dominating point of interest. It is interesting to note that the tone of the sky is just a little darker than the snow. Careful observation will show that this is often the case on a dull winter's day, but unless proper precautions are taken to reproduce tones correctly, the sky is not always so rendered in a photograph. In this instance we note that a four-times filter was used and an ample exposure of one-fifth of a second was given at *f*:16. The camera used was a 2¼ x 3¼ Icarette, Carl Zeiss Icar lens of 3½ inches' focal length. The exposure was made in failing light at 4 P. M. in February. The enlargement which is very attractively mounted with an ink line drawn on the print close to the edge, is on P. M. C. No. 3.

MAKING M. Q. TUBES

I have been making my own developing tubes (M. Q.) and find it so satisfactory, interesting and profitable work, that I think others might like to try same. One gets fifty small vials (size regular M. Q. tubes) and corks for same and then proceeds in the following manner:

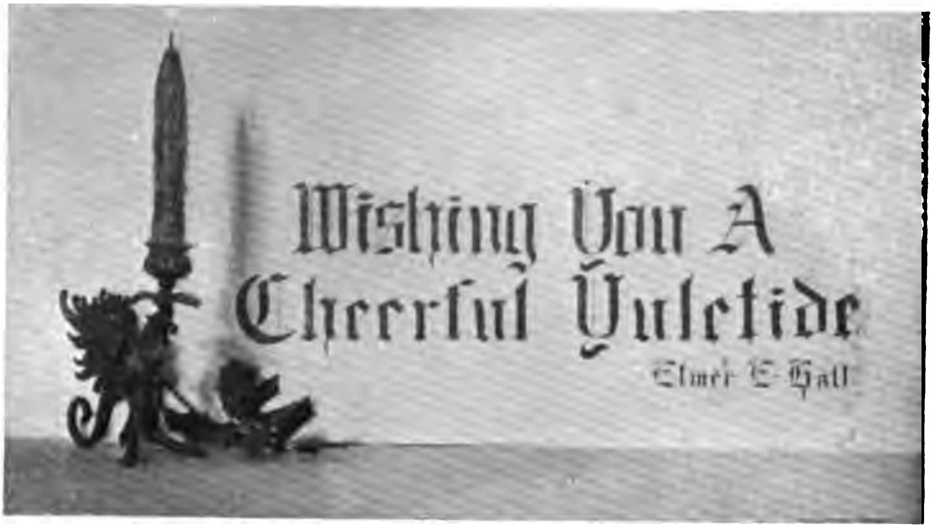
1. Weigh out 7.5 g metol and 25 g hydrochinon. Place in tin can with cover — and shake thoroughly.
2. Weigh out 145.5 g anhydrous sodium sulphite, 291 g anhydrous sodium carbonate and 1 g potassium bromide. Place in another tin can with cover and shake up thoroughly.

When this is finished weigh out 8.75 g of mixture No. 2 and place that amount in each vial. Then place a paraffined paper wad on top of this chemical mixture, and proceed to weigh out 0.65 g of mixture No. 1. Place this on top of the paper wad in each vial. Then cork and wax vials by dipping ends of corks and bottles in hot paraffin. Each tube is to be dissolved in eight (8) ozs. of water. — ELMER F. SHELBERG.

COPYING FADED PRINTS

In the ordinary routine of copying, the usual correct result to be aimed at is to obtain a reproduction as near as possible like the original copy, although in many cases many try to improve upon it. In the forthcoming remarks, it is proposed to show how it is possible to obtain a bright, crisp print from a very flat copy by the use of chemicals. It does not necessarily follow that the copyist must perform all the various processes mentioned below in obtaining the desired result (in fact, it would be a sheer waste of time, work and material to do so): but I wish to show the latitude there is in the after-treatment of weak copy negatives.

In the first place, the exposure has to be considered, which, when the copy is weak, is usually as short as possible, and the negative forced up in development so as to get it as bright as possible. But really in this case the plate should be overexposed to a certain degree, and then developed to infinity, the denser the better. After the plate has been fixed it should be put (without previous washing) into a very weak solution of potassium ferricyanide and hypo. As generally known, potassium ferricyanide, when used in a weak solution, always acts on the shadows first, and so, if the negative is fairly dense, it can be reduced (to a certain extent) without losing any detail.



CHRISTMAS CARD — ELMER E. HALL

After this, if the negative is not bright enough, it can be (after washing) intensified in the ordinary way. By this stage a fairly good print should be obtained.

Presuming the original is very weak indeed, the print can still be improved upon. For instance, if the negative is not too dense it can be put into the enlarger and printed (the same size, of course) on hard paper, if a powerful light can be obtained. This would make a great difference as compared with an ordinary print made by contact.

It matters not how flat or yellow the original may be, a hard reproduction can be obtained. For one thing, a positive can be made and then a new negative made, both these being intensified and treated as already described. One advantage of this method is, if the copy is for enlarging and the original negative is inclined to be a bit dense, a new thin negative suitable for enlarging can be obtained. — *British Journal of Photography.*

LENS FOR PORTRAITS

A lens of fourteen inches' focal length is not by any means too long for portraits to be made on 5 x 7 plates, especially if the pictures are to be of the head and shoulders only. For groups or standing full-length figures possibly a lens of shorter focus might be more convenient unless plenty of working space is available. An aplanatic lens is one that is free from spherical and chromatic aberrations. A rapid rectilinear or R. R. lens is one that is free from curvilinear distortion, and the manner in which the freedom from distortion is obtained is very simple. A R. R. lens is made up of two similar components and the diaphragm is in the middle, so that it is in front of the rear combination and behind the front one. The front combination used alone — a single lens with the stop behind it — would give "pincushion" distortion, and straight lines near the margins would be bowed in towards the middle of the picture. The rear combination — a single lens with the stop in front of it — would give the opposite kind of distortion, barrel-shaped distortion, in which straight lines would appear to be bowed outwards, away from the center. In the R. R. lens both these distortions are eliminated because one kind of distortion neutralizes the other.

A SUGGESTION FOR A CHRISTMAS CARD

THE CHRISTMAS CARD shown here was made by setting up the group on a table on a dark day in a room with two windows. The shadow effect was obtained by using a 200 watt lamp and reflector, close up to group. The exposure at f:32 was, I believe, about one minute. This same idea for individual cards may be adapted for any occasion. Last year I used "Kewpie" dolls as models for Valentine cards, and this year intend to make Easter cards. I finished all the cards on double weight, dead matt paper and allowed a narrow white border to set off the card. — ELMER E. HALL.

BLUE TONES ON DEVELOPING PAPERS

With reference to suggestions for obtaining blue tones on developing-out papers, we have found that the following formulae give very good results. First bleach the print in:

Water	10 oz.
Potassium ferricyanide	100 gr.
Ammonia water (28 per cent)	100 min.

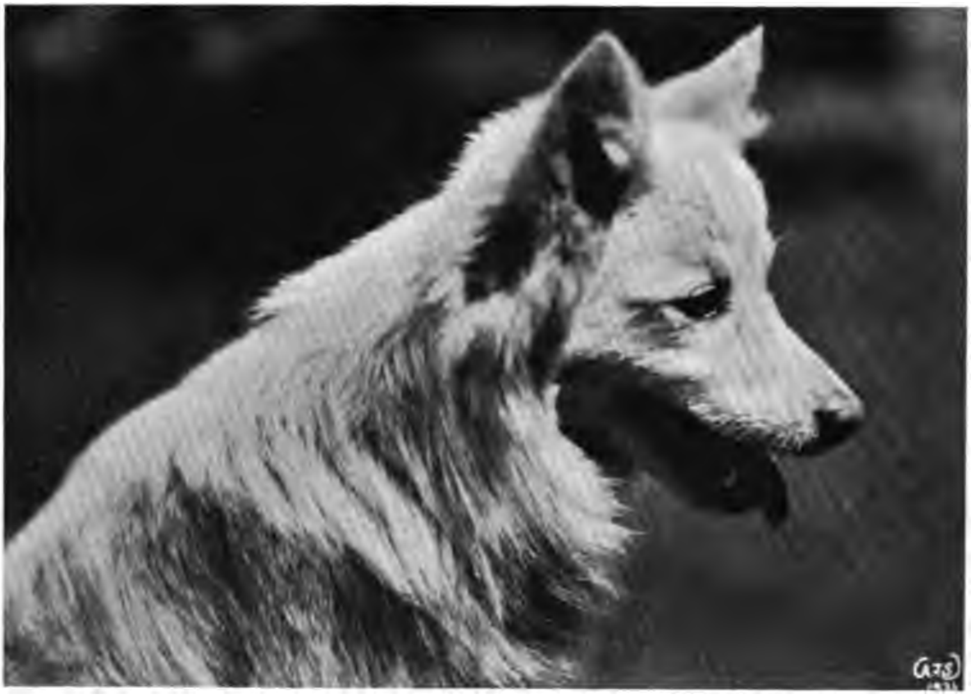
After bleaching, wash well and tone in the following bath, rocking constantly:

Water	10 oz.
Ferrous sulphate	100 gr.
Hydrochloric acid c. p.	50 min.

An alternative toning bath is as follows:

Water	10 oz.
Ferric chloride	220 gr.

After toning, wash free from stain, and it is desirable to immerse the print for a few minutes in a 10 per cent. hypo solution containing 50 grains of boracic acid to every ounce of solid hypo.



BUDDY A. J. SCHUBERT

The above method has not much tendency to stain the highlights, although with all the iron toning processes there is always some slight tendency to veiled highlights. Usually the stain in the highlights can be removed in the washing, particularly if the water is used a little warm. We have had a good deal of success in obtaining a pure brilliant blue-print without the slightest veiling of the highlights by toning with gold.

The following formula is a good one:

Ammonium sulphocyanate	20 gr.
Water	1 oz.

to which add:

Gold chloride	2 gr.
Water	1 oz.

The print is immersed in this bath and toned until the desired blue is reached.

The drawbacks of the above process are the length of time occupied in securing the tone, and the comparatively high cost.

We think that if the iron method recommended earlier in this note is used, there will be no serious trouble with stained highlights. — *Ansco Research Laboratory.*

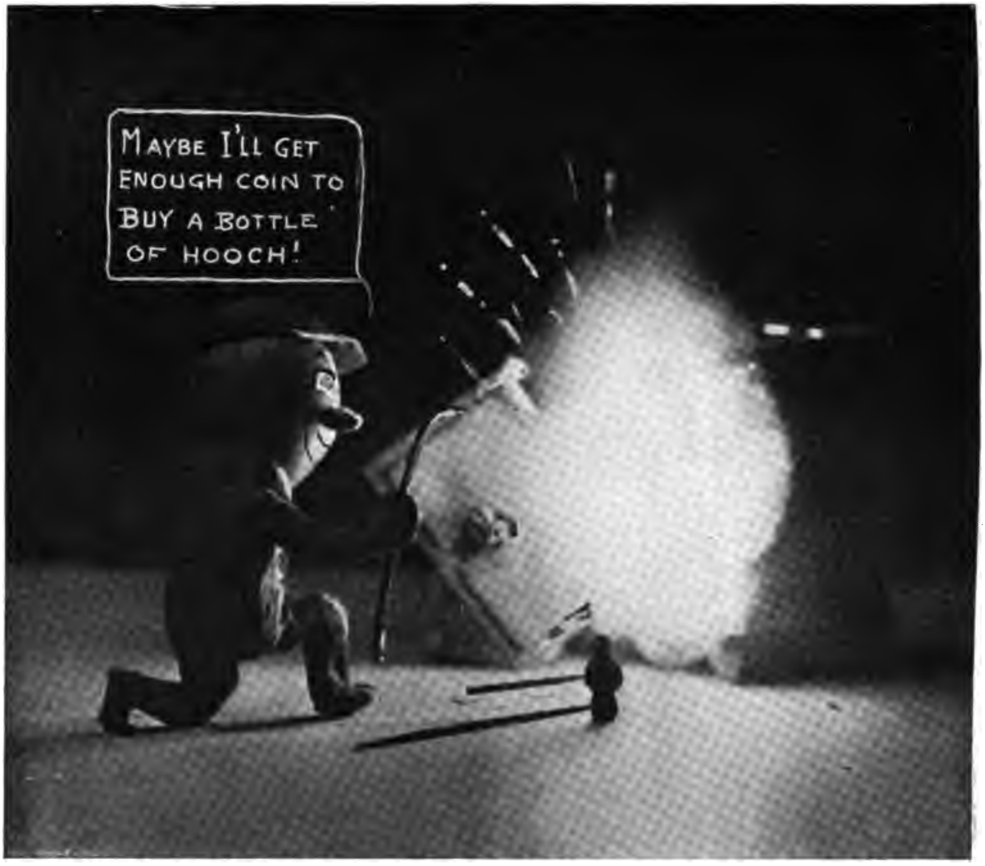
BUDDY

In making a picture of a furry animal one of the most important considerations is to suggest the texture of the fur. This can be done only by getting suitable lighting conditions, by giving correct exposure and by developing so that the highlights are not too dense. When the fur is white these three conditions become even more essential, because a lack of care in any one of the three points will be more noticeable than if the fur were dark in color. In making his picture of "Buddy," Mr. Schubert chose a difficult subject, but he has overcome the difficulties most successfully. The lighting, from top, is effective and brings out the modeling and textures, which the correct exposure and careful development have helped to preserve. The head is well placed in the picture space, too, and the picture is one of unusual interest. It was made in Los Angeles, California, outside, in yard, with an Eastman 5 x 7 view camera, Velostigmat Series II lens of 7 inches' focal length, used at *f*:4.5, exposure one-fiftieth second, bright sunlight at 2 P. M. in August. The Eastman Portrait film was developed in pyro and the print is on Azo, hard medium.

KEEPING THE BACKGROUND PLAIN

Whatever we select for the background, we must remember to arrange it in one of two ways. Either it must appear in the picture as a perfectly smooth tone, without any suggestions of detail or form, or else it must suggest or indicate its nature and form, in which case it must be the subject of careful attention. Many of the photographs which are made fail in this respect. It is evident from them that the photographer has hung up a sheet or some similar thing to serve as a plain background but that he has taken no further pains to get it plain. The consequence is that creases, or folds, or texture, or dirt marks, or one of the many things that ought not to show where all is to be plain, do show, and by the otherwise plain character of the background they are specially conspicuous.

Therefore, we lay stress on the need to stretch the


MAYBE I'LL GET ENOUGH COIN TO BUY A BOTTLE OF HOOCH!

THE SAFE BLOWER W. R. BRADFORD

paper on a card or board. It should be paper without any very pronounced grain. It should be sufficiently far behind the actual subject of the picture to be out of focus; although this should not be detected, as it should have no detail or other irregularity of surface to show whether it was in focus or not. It is sometimes possible to hide any irregularities by moving about the background during the exposure; but there is always a risk in so doing of moving the subject also.

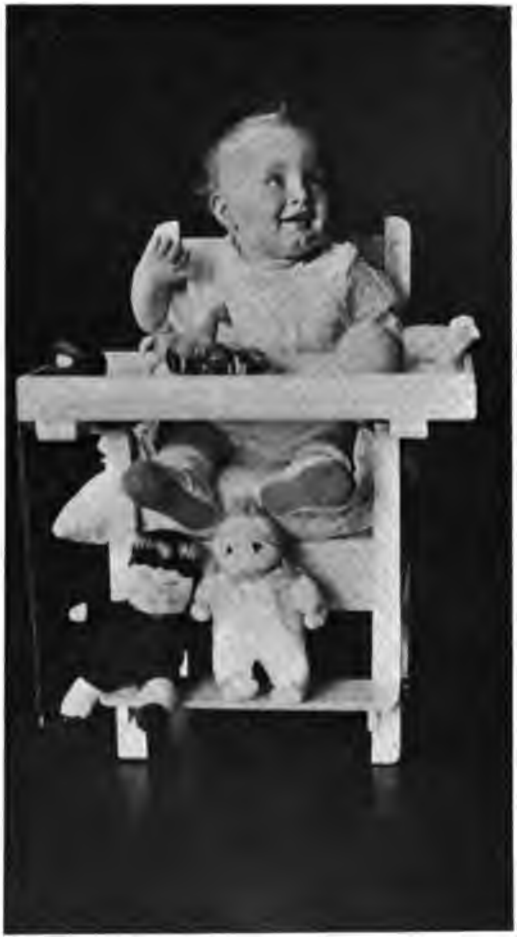
The tone of the background need not be alike all over. It may be graduated so as to be lighter on one side that the other; and a very beautiful and even graduation may be obtained very simply by using a large enough background and bending it into a curve, so that one part catches the light more than another.

A somewhat similar set of considerations applies to the surface on which the subject is to be placed. Sometimes a long strip of card or paper can be used to support the subject and to come up behind it also and serve as the background; but it is generally more satisfactory to indicate both a horizontal and a vertical surface. In that case we get a horizontal line across the picture, where the background meets the "floor;" and it is well to have this far enough behind the object to be fuzzy. At the same time it should be straight, and there should not be any signs of an imperfect junction, such as we see when the roller of a rollable background is allowed to lie on the floor—a fault frequently noticeable in amateur portraiture.

On a small scale, we can deal very well with such a case by arranging the object on a sheet of card on the table, with a fair extent of card behind the object, ending in a straight, clean edge. The background is supported separately a few inches behind this edge, and carried below it, so that the bottom of the background is not seen from the lens at all. It is difficult to explain why, but this method seems to give more relief or solidity to the object than most other methods; whatever it is we are photographing does not appear to have a background pushed close up against it. — *Photography.*

THE SAFE BLOWER

These "toyland" studies of Mr. Bradford's are not only very interesting and amusing, but they are also remarkably clever and wonderfully ingenious. He apparently possesses an unlimited supply of original ideas. He draws on this supply very freely and combines with it the skill of the practiced draughtsman and the knowledge of the experienced photographer. His data on "The Safe Blower" show that knowledge and skill were used in its production. The figure of the safe blower was modeled in putty



OUR HEIR RAYMOND R. CARVER

and stained gray. The door of the toy safe was removed and propped up as though blown off by the explosion. A tungsten wire fuse was made, placed in the safe, and wires run from the fuse to the battery circuit, connected to the curtain slide shutter. An overhead 50-watt Mazda bulb was lighted and an exposure of one minute given, curtain shutter closed, flash-light apparatus connected, and a flash given with two grains of flash powder. The negative was then developed with one quarter the usual amount of carbonate and the solution diluted with twice the usual quantity of water. The camera used was a Cycle Graphic, 4 x 5, fitted with a Beck Rectilinear lens of 11 inches' focal length, stop *f*:11. The Eastman Commercial Ortho film was developed with metol-hydrochinon and the enlargement is on Artura Carbon Black.

OUR HEIR

It must have been a rather trying experience taking a picture of a baby indoors and having to give as long an exposure as three seconds. We imagine Mr. Carver will agree with us that a professional photographer who takes many pictures of babies saves himself a lot of worry and anxiety by using a rapid lens and cutting the exposure down to a fraction of a second. Mr. Carver's lens was stopped down to *f*:16, but by using it at its full opening, *f*:7.7 (practically *f*:8), he could have reduced the exposure to three quarters of a second with exactly the same result. A professional photographer would probably use a more rapid lens still, *f*:4.5 or *f*:3.8, and thus have a margin of safety to allow for poor lighting conditions. Of course the wide open lens gives less depth of focus and the focusing must de done carefully, but at *f*:7.7 the anastigmat lens on a 3A camera has sufficient depth for a single figure like this. Technically the picture is a good one. We would prefer to have less violent contract between the child and the background, for such harsh contrast is not in keeping with the subject. The photographer surely was lucky to get this picture with so long an exposure and with no trace of any movement. Taken indoors, bright light at 3 P. M. in February, Eastman Speed film developed with Eastman M. Q. and printed on Azo No. 2 Carbon.

STAINS IN URANIUM TONING

Stains in uranium toning may be caused by the toning solution not being sufficiently acid. They may be caused by impurities in the paper, by insufficient fixing of the enlargement originally, or by dirty dishes or fingers.

Simple washing in running water will remove the stains, but it will remove the tone of the print also, bringing it back to its original color. It may then be retoned and if proper care is taken, no stains should make their appearance.

A COLLECTION OF FACTS

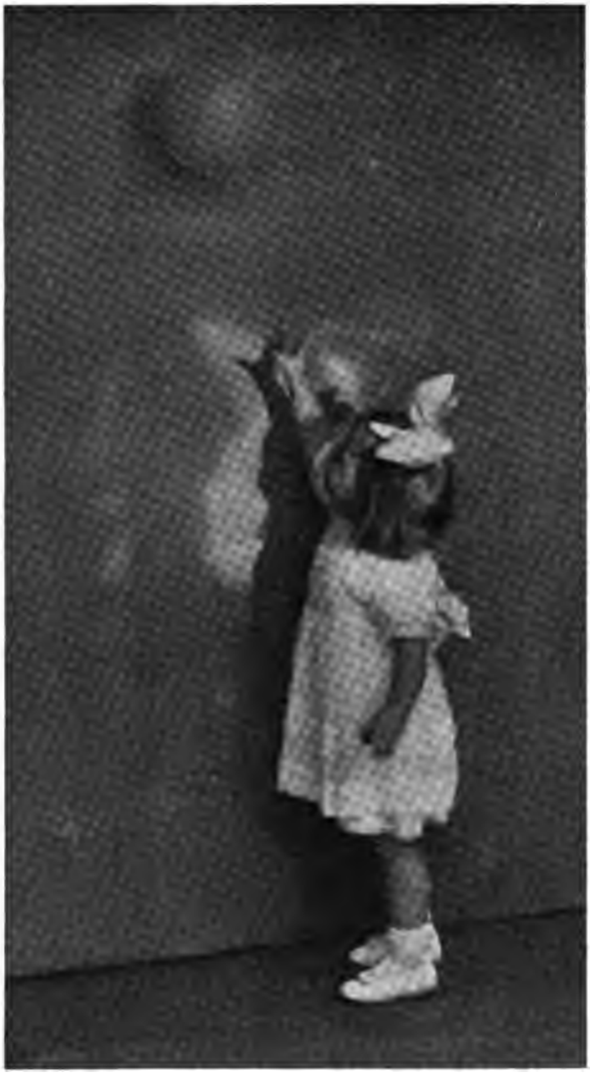
Here are formulated a collection of facts in the form of if's and don'ts, from which the following statements have been compiled to apply to all developers, in a general way.

Before you knock, investigate the cause of your complaint — look at our list of questions. If you are beyond those questions, the fault is certainly not with you.

The usual troubles are: impure or grayish whites, greenish or brownish tones, contrasty, or weak prints (lacking detail), flat or "muddy" prints, or too dark prints, yellowish or brownish stains, round dark spots, blisters, discoloration around edge of prints, curling or cracking of the surface, round white spots, surface marks (on glossy paper), etc.

The following questions will point out a remedy for the usual photographic troubles.

1. Are you a careful operator, or do you carry developer in your hands over to the fixing bath, and *vice versa*?
2. Is there anything wrong with the negative?
3. Are you exposing right, or are you over- or underexposing?
4. Is your laboratory too warm, or damp, or exposed to chemical fumes, or sewer gas?
5. Is you balance accurate?
6. Are the weights accurate?
7. Any mistakes in the weighings?
8. Is your water pure and clean?
9. Are your chemicals pure?
10. Did you mix your chemicals in the proper order?



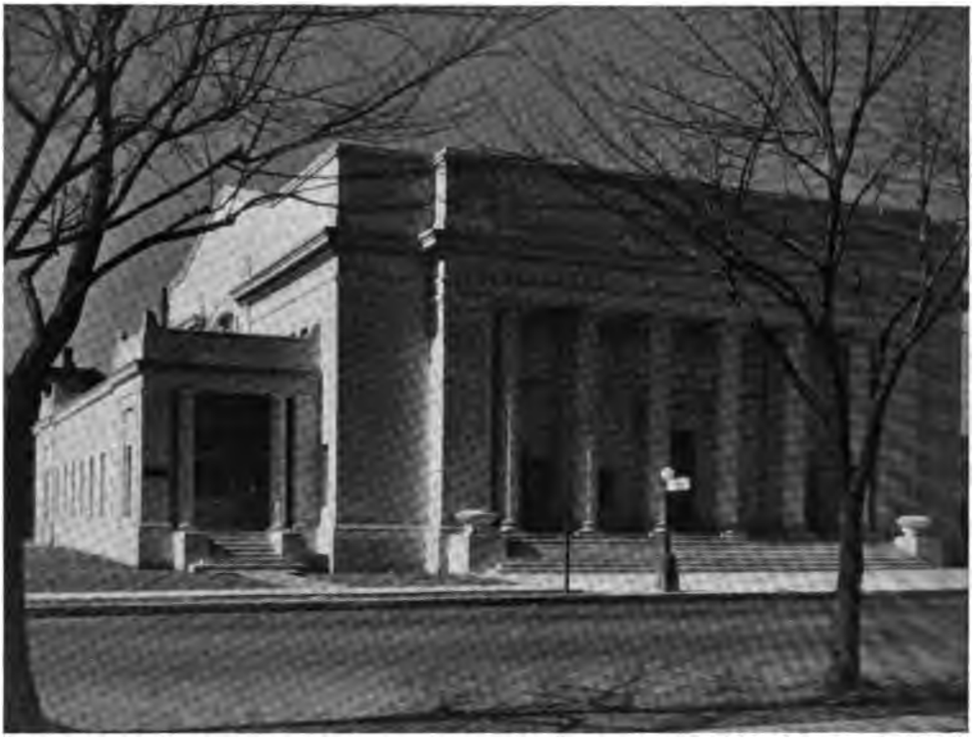
OUT OF REACH ELIZABETH B. WOTKYNS

11. Was the solution clear before you added the next chemical?
12. Is your developer too old?
13. Are you "forcing" your developer?
14. How long are you developing?
15. Are you "spreading" your developer properly?
16. Is the amount of potassium bromide right?
17. How about the temperature?
18. Is the temperature of all the baths about the same (65° F. to 70° F.)?
19. What paper are you using?
20. Is it suited for your purpose?
21. Is it "too dry," or has it been spoiled by light, fumes, or otherwise?
22. Are you printing too close to light?
23. Did you allow prints to cool before developing?
24. Did you move prints about, while in the different baths?
25. Did you look out for air "bells" and "bubbles?"
26. Did you crease or break any prints while washing?
27. Did you let the water run from the tap directly on the print?
28. Did you have sufficient hardener?
29. Was fixing bath acid? Was it milky?
30. Do you wash thoroughly?

After this, blame your materials. — *Northern Photo News.*

OUT OF REACH

This is a very clever and original picture—a good idea well carried out. The tones, though perhaps a little dark, are correct and about as they would appear in contrast with the white dress. A very dainty and perhaps a more pleasing effect might be



AN IMPOSING EDIFICE FORD E. SAMUEL

secured by keeping the entire picture in light tones, light floor covering and light background. It might be worth trying again with the change suggested. As usual the technical treatment is fully adequate and shows care and skill. A slightly darker tone in the mount would be an improvement, we think, in this particular case. Made with a 3¼ x 4¼ Pressman Reflex camera, fitted with an Aldis anastigmat lens of 5¾ inches' focal length, used at *f*:4.5, bright light at 3.30 P.M., exposure one-fifteenth second, double coated Standard Orthonon plate.

AN IMPOSING EDIFICE

The title is well chosen. The building is an imposing one and is very beautiful. We think the maker of the picture will agree with us that a more interesting lighting might have been selected. Instead of having the front of the building all in shadow and a strong light on the side where there is nothing of very great pictorial importance, it might have been better to wait till the light was just a little farther around towards the front, so that it would throw a little more light on the pillars and the very interesting doorway. The proper selection of lighting conditions is one of the most important features of architectural photography. The reproduction of it on the film is easy and simple compared with the task of selecting the best conditions. The writer, many years ago, spent an entire day studying the west front of Salisbury Cathedral in order to find out at what time the lighting was most effective, but the actual photographing, when that was ascertained, was a matter of only a very few moments. A slightly more distant point of view, or a lens of slightly shorter focal length, would be better in this case. As it is, the building looks a little crowded. Made in Alameda, California, with a 6½ x 8½ Seneca View camera, Velostigmat Series II lens of 9½ inches' focal length, used at *f*:11, six-times screen, bright light at 9.30 A. M. in March, exposure one-fifth second, Commercial Ortho. Film developed with pyro-soda, print on Azo E No. 2..

ENLARGING BY STRIPPING

It is possible to enlarge a negative a little, from 4 x 5 to about 5 x 7, just by removing the film from the glass, allowing it to expand naturally, and then letting it dry in contact with a larger piece of glass. This is particularly suitable for negatives that are a little too dense and strong as the stretching tends to reduce the density a little.

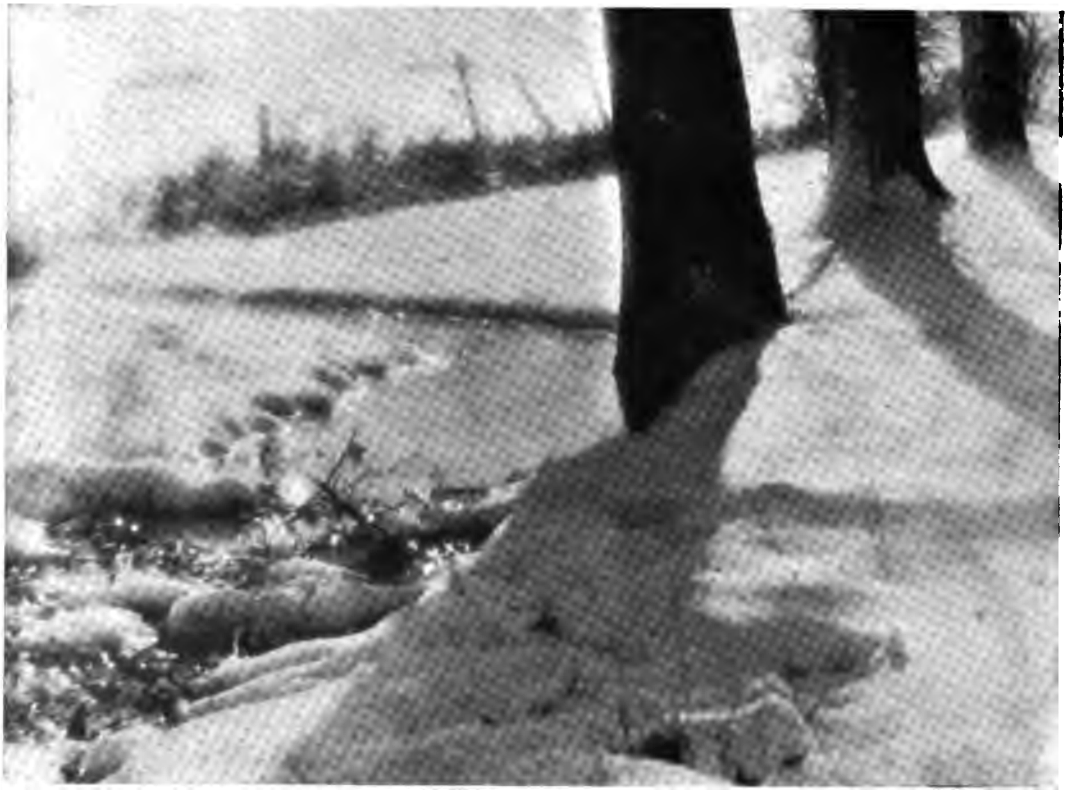
The negative should be soaked for ten minutes in:

Potassium fluoride	15 gr.	30 g
Distilled water	1 oz.	1000 ccm

Then, without draining, immerse in:

Citric acid	1 oz.	50 g.
Water	20 oz.	1000 ccm

The film will almost immediately begin to lift at the corners. The negative should then be transferred to a dish of clean water and the film gently rolled up with the fingers from one end. A clean and preferably gelatinized glass should be slid on the top of the first one and the film unrolled and glass and film lifted out and the water gently allowed to run off. This negative should then be allowed to dry.



THE BROOK IN WINTER JOHN N. CONSDORF

THE BROOK IN WINTER

The tones in this picture are very fine and there is a strong suggestion of sunlight that is very interesting. The composition, however, in one respect is unsatisfactory, the three dark tree trunks are poorly placed in the picture-space and they "pull" very strongly towards the corner and out of the picture. If this print were to be cut in half, exactly in the middle, it would make two good pictures, both of which, as regards composition, would be more pleasing than the whole print. Graflex camera 3¼ x 4¼, Verito lens of 7 inches' focal length, used at f:4, three-times filter, exposure one-fifteenth second, good light, at 10 A. M. in November, Standard Orthonon plate developed with pyro-soda, enlargement on P. M. C. No. 6.

GET YOUR PRINTS OFF

Good work won't always make a good business. It is important to give your customers what they want — but it is just as important to give it to them as they want it and when they want it.

It may very well be laid down as an axiom for the professional photographer that when proofs are delivered quickly the chances of getting a big order are increased, and that when the order is delivered promptly the chances of getting a re-order are also increased.

When photographers used nothing but daylight printing processes, the weather was often blamed for delays in getting out orders. But customers will not listen to the weather excuse now. They know that most of the work is printed by artificial light; and that, when there is a delay in the delivery of their orders, the fault lies with the photographer and not with the weather.

A professional, whose aim is to make progress, cannot hold on to the old methods of printing; he *cannot* afford to get behind with his orders; and he *cannot* afford to lose customers. The man who takes advantage of modern inventions for rapid artificial-light printing gets his work out quickly, pleases his customers, and increases his business. More than that, he is in a position to take on special work which the man without these facilities would not be able to touch.

Take, for example, two photographers in a small town. One uses a modern printing machine and the other uses an old-fashioned printing frame. Some event of local interest takes place in the town. Both photographers make negatives. The man with the printing machine gets at least two hundred prints out within a few hours, and makes his sales; the other man is not able to get out more than a few dozen copies, which remain unsold.

The photographer who wants to get his work finished and delivered in good time, must fit up his workroom with one of the modern printing machines. — *Photo Digest.*

THE PHOTOGRAPHIC REVIEW

E. J. WALL, F. C. S., F. R. P. S.

TIN TONING. — J. G. F. Druce deals with this subject and states that pleasing tones are obtained, but that there is some difficulty in obtaining uniform results, and that ordinary sulphide toning is much simpler. The prints were bleached in a normal solution of:

Ammonium bromide	10 g	80 gr.
Potassium ferricyanide	30 g	240 gr.
Water	1000 ccm	16 oz.

Other bleaching solutions, such as cupric and mercuric chlorides, do not give such good results, unless great care be taken. To obtain a warm brown tone the bleached prints were immersed in:

Stannous chloride	50 g	348 gr.
Water	500 ccm	8 oz.

To this was added enough of the following solution to form a clear solution:

Sodium hydroxide	50 g	384 gr
Water	500 ccm	8 oz.

Then the bulk was made up to 1000 ccm or 16 oz. After standing, the clear solution was decanted and contained approximately 2.5 per cent of sodium hydrogen stannite, formed according to the following equation:

$SnCl_2 + 3NaOH = NaHSnO_2 + 2NaCl + 2H_2O$

Druce has shown (*Chem. News*. 1922, **124**, 215) that even when excess of alkali is used normal sodium stannite is not formed. It is advisable to dilute this solution still further, so that the working solution contains 0.5 per cent of stannite, although hydrolysis begins to appear in the shape of a precipitate. Assuming that the image is silver ferrocyanide the reaction that occurs is:

$Ag_4FeC_6N_6 + 2NaHSnO_2 + 6NaOH = 4\ Ag + Na_4FeC_6N_6 + 2Na_2SnO_3$. Or, the silver ferrocyanide is reduced to metallic silver with the formation of sodium ferrocyanide, and sodium stannate. Apparently it is not advisable to wash the prints too long, as this removes the stannate and any metastannic acid, so that it is preferable to merely rinse the prints well and dry. Instead of using stannous chloride the more stable potassium and ammonium stannochlorides gave equally good results (*Brit. J. Phot.*, 1922, **69**, 433).

CORRECT FOCAL LENGTH. — A. Lockett deals with Debenham's method of finding the correct focal length of a lens. This rule is to use an ordinary foot-rule and focus to a definite scale or ratio. Measure the distance between the foot-rule and the image and multiply by the ratio, and divide by the ratio plus 1 squared or,

$$F = D \times \frac{R}{(R+1)^2}$$

For example, suppose the image of the foot-rule is exactly 3 inches long, or a ratio, R, of 4, and the distance from the rule to the ground glass is found to be 53⅛ ins., then 53⅛ x 4 = 212½ and this divided by 4+1 squared or 25 = 8½ ins. focus. With careful focusing this gives absolutely correct results, provided the nodal points of the lenses coincide, but as they rarely do, the error is the nodal separation, NS, multiplied by $\frac{R}{(R+1)^2}$. Lockett suggests the following method which does away with the necessity of finding the nodes. Proceed as in the Debenham method, and instead of proceeding to calculate, focus the rule sharply to another larger ratio, say 5, and again measure the distance. The true focus can then be found by the following formula in which D′ and D″ are the two distances and R′ and R″ the two ratios.

$$\frac{D''-D'}{(R''+1 \div R'')-(R'+1 \div R')}$$

Suppose that in testing a lens the ratio is 4 and the distance 62.7 ins.; and for the larger ratio we have the number 5 and the distance is 72.2, then:

$$\frac{72.2 - 62.7}{5\ 1/5 - 4\frac{1}{4}} = 95/10 \div 19/20 = 10 \text{ ins.}$$

This method is only necessary when the true focus is required, as when working to an accurate scale (*Brit. J. Phot.*, 1922, **69**, 434).

SILVERING GLASS — Mr. E. S. King, of Harvard observatory sends a reprint of a paper descriptive of the method of using the formaldehyde process of silvering glass, which was worked out by his son when sixteen years old. It was found that the original formula contained too much formaldehyde, and that if the temperature of the mirror was about 5 to 10 degrees C (10°-20° F.) higher than the solution better results were obtained. The actual directions for silvering are as follows:

First a saturated solution of stannous chloride is made up, and diluted for use with an equal volume of water. Several wads of clean absorbent cotton are laid out on a clean sheet of paper. The surface of the mirror is carefully rubbed with one of the wads dipped in nitric acid. This removes the old coat of silver, with all the dirt which may be adhering. After thoroughly washing off the nitric acid, a fresh wad of cotton wet with the stannous chloride solution is rubbed over every part of the surface of the mirror. Water is then poured over the mirror, and the surface is rubbed, first with the same wad, and then with a fresh one. Great care should be taken to remove all traces of the stannous chloride, as, if any is left on, it makes the coat granular. One should be careful not to touch the surface with the fingers, as any trace of grease is fatal. The mirror, if a small one, may then be placed in a tray just a little larger than itself, and covered with water at temperature from 18°-21°C (65° to 70°F.). If a large mirror, a band of waxed paper, tied tightly around the edge, makes a dam and serves the same purpose.

Two solutions are required as follows:

A

Water	100 ccm
Silver nitrate	4.3 g

Add strong ammonia just sufficient to redissolve the precipitate first formed.

B

Water	20 ccm
Formaldehyde (Merck)	4 ccm

The temperature of these solutions should be about 7° to 10°C. (45° to 50°F.)

The wash water is then poured off the mirror, the solutions quickly mixed and poured over the mirror. Silver will begin to be formed on the surface of the glass almost at once, the solution turning to a red brown color. In about half a minute, the solution begins to turn muddy, with a granular black precipitate. The mirror should be left in it until this precipitate begins to stick to its surface. This usually requires from three to five minutes. The mirror is then washed with wet cotton and flowing water, and set on edge to dry. It is important to get as thick a coat as possible, for such a coat stands burnishing better and lasts longer. The thickness can be roughly estimated by observing the amount of light transmitted by it. An electric light filament can barely be seen through a thick coat. The burnishing is done with a pad of chamois skin, into which some very fine rouge is worked. The best rouge is that washed out from the cloths used after the final polishing in the making of a large lens. The rouge is only sufficient to color the pad. The surface of the pad must be kept perfectly free from dust, or the delicate surface of the silver will be scratched (*Pop. Astronomy*, Feb. 1922.)

While the subject of silvering glass may appeal to but few amateurs, every user of a reflex camera may be interested at some time. The use of stannous chloride is ascribed to Lundine, and though this may be known by his name it was, I believe, first suggested in J. E. Pratt's *Eng. Patent* 1,259, 1876. The formaldehyde process was suggested first by A. & L. Lumière (*J. de Phys.*, 1895, 29; *Jahrbuch*, 1895, 245). Their formula was 100 ccm of 10 per cent solution of silver nitrate solution, with just enough ammonia to dissolve the precipitate first formed, taking care to avoid excess of ammonia; this was then diluted to 1000 ccm. A 10 per cent solution of formaldehyde was also made by diluting the commercial 40 per cent solution. For use 2 volumes of silver solution were mixed with 1 of formaldehyde, and the temperature recommended was 15° to 19° C (59° to 66° F). If one calculates the volume of Mr. King's solutions as 150 the ratio of silver to formaldehyde will be found to be 4.3:1.6 or 1:0.372, whereas Lumière's was 1:5. Professor R. W. Wood in "Physical Optics," 1922, 281, in his description of silvering interferometer mirrors recommends a 1 per cent solution of silver nitrate and 4 per cent of formaldehyde, and he states that this gives a pinkish film, which forms an excellent substratum for the thicker deposit, which is obtained by pouring off the above solution and applying a mixture of 3 of silver to 1 of formaldehyde, which gives the blue deposit. The ratio in this last solution is 1:1.3.

In a discussion on "The making of reflecting surfaces," at a joint meeting of the Physical and Optical Societies of London, 1920, N. H. Irving recommended a 0.2 per cent solution of silver nitrate, ammoniacal, with twice its volume of a solution of 8 to 10 drops of formaldehyde in 4 oz. of water, which was to be kept two days before use. He recommended the glass surface to be mopped with the silver solution first for at least a minute, before the application of the silvering mixture. Dr. J. W. French, *loc. cit.*, stated that the formaldehyde process had the sole merit of being very simple and rapid and therefore suitable for experimental work, but in the present stage of its development it was rarely used in optical manufacturing. Compared with the Brashear and Rochelle salts surfaces, the formaline surface was dark. The process has the additional disadvantage that one deposit can not be laid upon another, and can not be electrically plated with copper. There is some difference of manipulation possibly, as Wood distinctly states "if it is desired to produce a thick opaque deposit the silvering process should be repeated several times," and I have used Wood's method four times on the same glass in order to obtain a strippable film. S. J. Pace, speaking of the silvering of vacuum flasks for liquid air, said that he used the formaldehyde process and found that the best method of cleansing the glass from grease was with sulphuric acid, then washing carefully twice with double-distilled water. Very much better results were obtained by heating the glass nearly to redness before silvering, and then soaking well in the silvering solution before applying the reducing solution. The solution when ready for use should show a faint opalescence. Better results were obtained by using strong solutions and agitating the vessel until the silvering was complete. The dodge of heating the glass is excellent and passing a flame of a Bunsen burner or spirit lamp over it has always acted well.

Probably the most exhaustive research on this process was carried out by A. Silverman & R. M. Howe (*J. Ind. Eng. Chem.*, 1917, 9, 1032) and they developed two processes, a rapid and a slow cold process. The rapid cold process is as follows: 20 ccm of 0.2 molar solution of silver nitrate solution are mixed with 0.5 ccm of 80 per cent methyl alcohol, and 0.5 ccm of 40 per cent formaldehyde. The slow cold process was 16.5 ccm of 0.037 molar silver solution, 1 ccm of 1.000 molar cane sugar solution, 0.5 ccm 80 per cent methyl alcohol and 2 ccm 0.8 per cent solution of formaldehyde. These authors state that the cost is not over one cent per square foot of surface silvered. As regards the action of stannous chloride this, Dr. French stated, was not wholly removed by washing, but there was an extremely thin surface film left, which can only be removed with difficulty with nitric, but readily with hydrochloric acid. F. Fafet (*J. S. C. I.*, 1898, 154) suggested that a silicate of tin was formed on the surface of the glass, but as the tin treatment seems to be equally efficacious with celluloid, there can be no possibility of a silicate formation here. J. Graham (*Brit. J. Phot.*, 1919, 66, 155) recommended a 1 per cent solution of silver nitrate and a formaldehyde solution compounded of 40 per cent solution 45 ccm, water 450 ccm and methyl violet 1 g. For 20 sq. ins. of glass he recommended 90 ccm of the silver solution to which ammonia should be added drop by drop (a fountain pen filler comes in handy here), shaking after each addition. He stated that a slight excess of ammonia was not detrimental. In another vessel should be poured out 11 ccm of the formaldehyde solution. The surface of the glass should be well rubbed with a swab soaked in a 0.5 per cent solution of stannous chloride, then rinsed under the tap and wiped with a swab wetted with distilled water. Then the formaldehyde should be added to the silver solution and immediately poured over the glass. The solution at first turns muddy, but after 1 or 2 minutes clears up and then water should be run in from the tap, the mirror lifted out and drained and any adherent drops of water removed with blotting paper. After half an hour the mirror should be ready for polishing. The best temperature is between 21° and 26° C (70° to 80° F), though it is a good plan to have the glass a few degrees warmer than the solutions, and this can be effected by immersing it in tepid water. While it prolongs the silvering process considerably I have found that using the solutions at as low a temperature as possible, gives much more adherent films and I have thus chilled them to 30° C (37° F) and placed the dish in which the silvering is effected in cracked ice. This has always given me an extremely hard, adherent coating that can be repeated several times and polishes to a perfectly black mirror. I think that the effect of temperature of the solutions has not been taken sufficiently into account as a rule and with both the Brashear and Rochelle salts process cold solutions have given the best results. It is interesting to note that Mount Wilson and Greenwich, England, use the Brashear method and that this is actually a modification of one suggested by H. J. Burton in the *Brit. J. Almanac*. 1873, 89 and 1876, 58.

Messrs Lumière's latest instructions for the use of their process (*Agenda Lumière*, 1922, 325) are as follows: level the glass to be silvered carefully and cover with a 25 per cent solution of 90° alcohol, and leave for several minutes, during which time the actual silvering solution should be prepared. This is made as follows:

Formaldehyde, 40%	24 drops	24 drops
Alcohol, 90%	24 ccm	414 minims
Distilled water	24 ccm	414 minims
Silver solution	48 ccm	828 minims

This is sufficient for 1000 ccm (155 sq. in.) and the temperature should be from 16° to 20° C (60° to 68° F.) The silver solution is prepared as follows:

Silver nitrate	10 g	77 gr.
Distilled water	100 ccm	2 ozs.

Add solution of ammonia drop by drop till the brown precipitate first formed is redissolved; but extreme care must be taken not to add too much ammonia. Then add:

Silver nitrate	2 g	15.4 gr.
Distilled water	100 ccm	2 oz.

Then add sufficient distilled water to make the total bulk 1000 ccm or 16 oz., allow to stand for five minutes; then filter several times till quite clear. The glass should be drained from the alcohol bath and then covered with the silvering solution. The deposition begins in about 90 seconds and will be complete in about 2 minutes. During the silvering the dish should be gently rocked to prevent striae. As soon as the liquid begins to become cloudy or show spicules of silver, it should be poured off and a second quantity of the solution applied. Several coats may be thus applied till the desired thickness is obtained. At the close of the operation the surface has a slight reddish-brown appearance. It should be washed with successive lots of distilled water, and dried, standing it on white blotting paper. When the film is perfectly dry it can be polished with very soft chamois enclosing a pad of absorbent cotton, and rouge, the rouge as used for gold being the best.

The alcohol is used to prevent the formation of a precipitate in the solution and if this forms too much formaldehyde has been used. If too little formaldehyde be used, the film has a pronounced reddish-brown color and is punctuated with numerous pinholes. Thus it is necessary to make some preliminary experiments to determine the exact quantity that should be used. In all cases the formaldehyde must only be added just before applying the mixture to the glass. If too high a temperature be used, the deposit forms too rapidly and becomes powdery. With small mirrors the glass may be placed in a glass or porcelain dish, and the alcohol bath may be omitted. If instead of using the silvered surface as the mirror, the glass side is used, then the silver coat should be coated with:

Gum dammar	10 g	77 gr.
Bitumen of Judea (asphalt)	100 g	770 gr.
Red ochre	200 g	3 1/5 oz.
Benzol	1000 ccm	16 oz.

The ammoniacal solutions of silver are dangerous to keep in stock, as they may form explosive fulminating silver.

COLOR PHOTOGRAPHY. — L. Mauclaire patents a method of taking and projecting motion pictures in colors by splitting the exposure into four colors, instead of three; two of the fundamental colors are used, but the third is split into two. Two lenses, either vertically or horizontally juxtaposed, are used with an annular sector shutter, and the pictures are half the normal size (*U. S. Patent* 1,421,279, 1922). The idea of using four colors is old and has been used by Kelley & Raleigh, Mishonsky and others, and presents no particular virtues that warrant its adoption. Besides that the additive projection process is not commercial.

K. Warga proposes to take three negatives for cinematographic work, one without a filter, and the other two with red and green filters; all exposures being made simultaneously, though he does not state how he proposes to do this. From the ordinary, that is the filterless negative, he would make an ordinary black and white positive and dye it with yellow. From the green-filter and red-filter negatives, positives are made and these printed on bichromated gelatine coated on aluminum or other metal perforated bands. The images thus obtained are inked up with a greasy ink, which only takes on the exposed parts. These greasy prints are then soaked in the complementary colored dye solutions and pressed into contact with the yellow stained positive, the dye migrating from the matrices to the print (*U. S. Patent* 1,420,673, 1922). The use of metal supports for print-plates and greasy inks and bichromate methods has been anticipated by Thornton's patents.

P von Ditmar proposes to use the property which some dyes exhibit of becoming crystalline under the action of light. He would use a mixture of fuchsin and thymol, coated on opaque glass or paper, expose under a positive to the sun, then develop in barium or calcium chloride, bathe in potassium carbonate solution, then in chloride of lime or expose to the vapor of chlorine, which is said to produce the colors. It is also stated that the best results are obtained with dyes that completely bleach-out with long exposure (*D. R. Patent* 350,005, 1921; *Phot Ind.*, 1922, 550). Ditmar has gone back to his old love, which he suggested in 1897 (*D. Phot. Ztg.*, 1897, 340) and which Neuhauss (*Phot. Rund.*, 1898, 201) stated only gave iridescent colors, though by prolonged exposure of such a plate to sunlight a colored result was subsequently obtained under a colored transparency. Apparently Ditmar has now found some improvements, but it will take more than this to revive the bleach-out process.

LIGHT DARTS. — C. E K. Mees points out that while the continuous wave theory of light was adopted in order to explain the phenomena of interference and diffraction and has been useful, especially in the electromagnetic form given to it by Clerk Maxwell, recently phenomena have been observed for which it seems to be inadequate, and a theory of radiation in discrete units seems to be necessary. According to the quantum theory, energy is radiated by an electron in the form of waves such that their corresponding frequency is proportional to the energy. When X-radiation is absorbed, the energy communicated to the electrons corresponds to the frequency of the rays and therefore to the energy of the electron which generated the rays. It is clearly very difficult to account for this on the wave theory, while a quantum theory of radiation is more suitable. Recent work on the exposure of silver bromide grains to light has shown that the grains behave as if they differed in "sensitiveness," so that grains, even of the same size, do not become exposed at the same time, and Dr. Silberstein has suggested that the simplest explanation of this is that the grains which become developable are those which are hit by at least one quantum. A calculation of the chance that a grain of any size would be hit gives a relation between the size of the grains and the number of those being hit that become developable after a given exposure. On trial this relation was found to hold remarkably well, but the bigger grains, as compared with the smaller ones, became developable a little more quickly than they should have done according to the calculation. This can be explained by assuming that the projectiles of light are not infinitely slender, but have an appreciable diameter of an average size comparable with that of a very small grain. Dr. Silberstein suggests that the projectiles be called "light darts" rather than corpuscles, since there are good reasons to believe that they consist of long trains of waves, but of very small diameter, traveling, of course, with the velocity of light. The experimental work on the theory is being continued, and further evidence as to the nature of the structure of radiation obtained from the exposure of photographic emulsions will be published as it becomes available (*Sci. Amer.*, 1922, 336; *Abst. Bull.*, 1922, **8**, 241).

Wet Plate Process. — R. Grenell recommended for development of wet plates a 12 per cent solution of ferrous sulphate, instead of the usual 3 to 4 per cent, and stated that this gives good density with great clearness in halftone work in about 12 seconds (*Bull. Soc. Franc. Phot.*, 1921, **68**, 295). This was tested out by the Lehr und Versuchsanstalt, of Vienna, and the results confirmed; but K. Broum points out that with large plates, with such short development, it is very difficult to prevent irregularities and spots (*Phot. Korr.*, 1922, **59**, 105).

New Red Sensitizers. — The Kodak Research Laboratory announces the preparation of some new sensitizers for the deep red. The first, naphthacyanole, is a nitrate derived from beta-naphthquinaldine, which shows a strong red maximum at wave length 690 with a very marked gap in the green, even more so than pinacyanol, which it can replace when deep red sensitiveness is required. Another dye is acetaminocyanole derived from the corresponding quinaldine compound, which sensitizes in the red at 730 with a pronounced minimum in the green. Apparently this dye is unsuitable for bathing plates, as it hydrolyses and gives a totally different result, but it acts well when added to the emulsion before coating. A third dye called kryptocyanine gives very great red sensitiveness between 700 and 800 with a total want of sensitiveness below 680 in the orange. It would seem that it is most likely to be useful for astronomical work, as when used in very weak baths, 1:500,000, it gives such sensitiveness that with a strong yellow filter exposures of one second can be made with a lens at *f*:8 ,and the results obtained are characteristic of those obtained with infra-red; the sky appears dark and green foliage very bright, so that a tree covered with spring leaves appears as if in blossom and the grass like snow. The first and last named dyes are to be added to the list of the organic chemicals sold by the Laboratory (*Brit. J. Phot.*, 1922, **69**, 474).

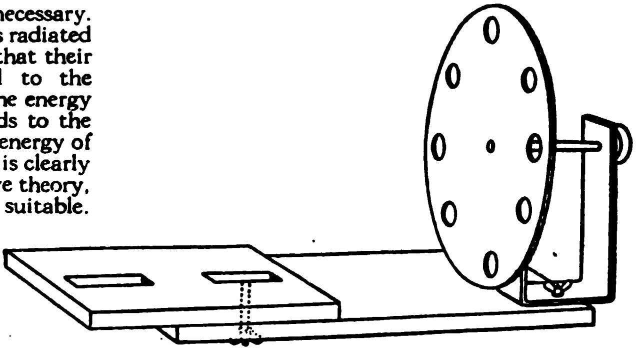


Fig. 1

The Speeds of Focal Plane Shutters. — F. H. A. Hall describes a method of ascertaining the speeds of a focal-plane shutter, which is comparatively simple. For this purpose a before-the-lens shutter is used, which gives a series of exposures during the travel of the blind. A disk of thin card about 6 inches in diameter is mounted on a spindle passing through two bearings and carrying a grooved pulley on the outer end. This disk has 8 equally spaced holes punched in it, seven-eighths of an inch in diameter, allowing sufficient margin from the edge to act as a light trap; thus from the outside edge of the hole to the edge of the disk is three-quarters of an inch. A piece of card with a five-eighths inch hole in the center is fitted in front of the lens to allow the

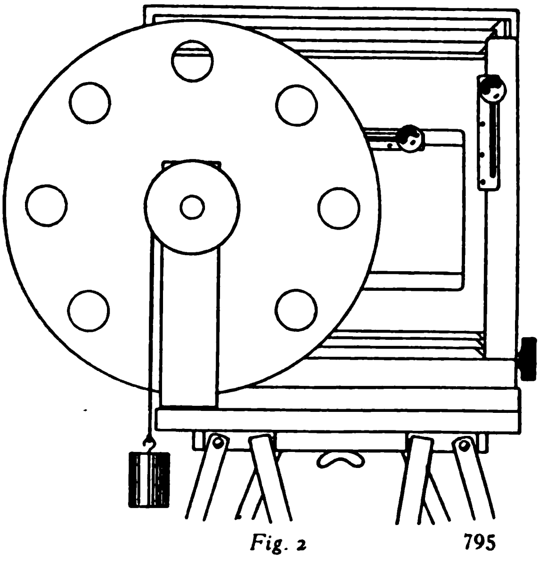


Fig. 2

smallest space consistent with free running between the disk and the lens front. The bearings for the spindle are made by bending a strip of brass, ½ x ⅛ inch, twice at right angles and drilling holes for the spindle. The base of the bearing bracket is clamped to a wooden support 1 inch square by about 6 inches long, and this is again clamped to a similar piece long enough to reach under the tripod head so that one screw will serve to attach to the camera. A weight of about three pounds is attached to a length, four feet, of strong thread with a loop on the opposite end, which is placed over a small pin driven into the bottom of the pulley groove. The weight is wound up to the top and held in position by a loop of thread placed over the end of the spindle. Fig. 1 shows the device detached and Fig. 2 in position for use.

The blind shutter is set with a narrow slit and wound up, the dark slide put in and the shutter slide withdrawn, the camera being pointed to a bright sky. The loop of thread, which holds the weight from falling, is cut through and the focal-plane blind released just as the weight strikes the ground, at which moment the disk will be revolving at its greatest speed. On development the negative will be found to be crossed by a number of dark bands, which are images of the slit; the actual number varying with the speed of the focal-plane blind. There is no need to press the release as the time taken for the weight to attain its maximum speed is quite sufficient to allow of reasonable deliberation. With shutters having a fixed tension and variable speeds by alteration of slit width, one negative will give all the data required; but with shutters with alteration of tension of spring a fresh negative must be made for each tension. The diameter of the pulley on the fixture is 1 inch, and its circumference 3.141. The maximum speed of the weight is 96 inches per second. As 96 divided by 3.141 = 31 approximately, the disk makes 31 revolutions per second. There being 8 holes in the disk, each exposure represents 1-248 second. The number of dark bands shown on the plate divided by 248 gives the fraction of a second for the blind to complete its travel and this divided by the number of slit widths contained in the height of the plate denotes the effective speed of the shutter. Example: Width of slit was 1-10 inch, height of plate 3 inches, number of slit widths in 3 inches, 30, number of images of slit 15, speed of front testing shutter 1-248 sec. Then 1-248 ÷ 15 = 1-16.5 sec. which is the time of travel of blind. This is multiplied by 30; 16.5 x 30 = 485 and the effective speed of the shutter is 1-485 second. This method not only shows the speed but also that the normal form of blind gives bands closer together at the top, which get wider apart till about half the distance, beyond which they are nearly equidistant, showing that the blind has then reached its maximum speed (*Brit. J. Phot.* 1922, **69**, 324). The front revolving disk with falling weight was suggested by Birkhauser (*Brit. J. Phot.*, 1909, **66**, 535), but a much more complicated form of sector disk was used, which however could be used for all forms of shutters and for measuring the duration of flashlights.

SENSITIZERS AND DESENSITIZERS. — E. König and R. Schuloff point out that most of the present day sensitizers belong to either the phthalein or the quinoline-cyanin dyes. The important members of the former class, which includes erythrosin and all the eosin group, are acid dyes, while the basic dyes of this class, such as rhodamin, are of little practical value. The isocyanins, on the other hand, are all basic dyes. With the acid eosin group, the introduction of a halide into the molecule enormously increases the sensitizing properties, this being, as is well known, most marked with erythrosin, which is a tetra-iodo compound. With the basic isocyanins, the introduction of a halide lowers the sensitizing power. It has been assumed in the past that the dye, to be a sensitizer, must itself be very sensitive to light, must have sharp absorption bands, or fluoresce strongly. But all these are negligible, and it is not possible to conclude, from its chemical constitution or its physical properties, whether a dye will sensitize or not.

A very similar state of affairs prevails as to the desensitizers. Although this matter has been closely studied, there does not seem to be any certainty from a chemical point of view as to the actual cause of desensitizing. Lüppo-Cramer considers it to be due to the oxidation of the dye; but this is untenable from the purely chemical point of view. Later researches have proved that it is possible to prepare both sensitizers and desensitizers from the same class of dyes, and they differ only in the fact that certain substituents are introduced into the common atomic grouping. Although the authors admit that, obviously from commercial considerations, they are unable to publish the constitution of the new desensitizers, they have determined what radicles act as sensitizers and what as desensitizers. Their researches have, as already announced, resulted in the discovery of pinakryptol and pinakryptol green (*Phot. Korr.*, 1922 **59**, 43).

Closely allied to this subject also is a note by F. Kropf, who after recalling the work of Capstaff and Bullock, and Renwick, as to the color-sensitizing by colorless salts, points out that extremely minute traces of metals in water may produce marked changes in fast emulsions. Distilled water was allowed to stand for from 2 to 20 hours in contact with various metals, and then plates were bathed in the water. Such plates showed more or less color-sensitiveness, as compared with a control plate treated with distilled water. Lead, tin, zinc and iron showed a marked effect. On the other hand, a plate bathed in water which had stood in contact with mercury showed a marked decrease in general sensitiveness but no color-sensitizing. No color-sensitizing action was observed with silver and copper, but the plates were cleaner and stood longer development (*Phot. Korr.*, 1922, **59**, 47).

A NEW DEVELOPER. — B. Homolka has discovered that hydrocoerulignon, which chemically is tetramethoxy-p-p'-dioxydiphenyl in an alkaline solution, is a developer and gives a colored image. The formula recommended is:

Sodium sulphite, dry	50 g	384 gr.
Potassium carbonate	50 g	384 gr.
Hydrocoerulignon	10 g	77 gr.
Water	1000 ccm	16 oz.

The image appears in about 30 seconds and development is complete in from 4 to 5 minutes. After fixing, the image is seen to be clean, vigorous and of a brown color, and actually consists of an image of black metallic silver and an orange image of coerulignon. If treated with an alkaline solution of sodium hydrosulphite the dye image is dissolved, leaving the black silver image. Farmer's reducer dissolves the silver image, and leaves the dye image. Potassium cyanide cannot be used to dissolve the silver as it also dissolves the dye. (*Phot. Korr.*, 1922, **59**, 29). Homolka has always paid special attention to this subject of color-giving developers, and announced the use of indoxyl, which gives blue images, and thio-indoxyl, which gives red images in conjunction with the black silver deposit (*Phot. Korr.*, 1907, **44**, 55). Later he suggested the use of the ethyl or methyl compound of naphtho-hydrochinon, which also gives a blue dye image (*Phot. Korr.*, 1914, **51**, 256,471) and he proposed the use of oxy-isocarbostyril, which gives a yellow image (*Jahrbuch*, 1914, **28**, 22). R. Fischer patented (*Ger. Patent* 257,167, 1911; *U. S. Pat.* 1,055,155; 1913) the use of indoxyl and other compounds and obtained further patents (*U. S. Pat.* 1,079,756, 1913; 1,102,028, 1914) for the same class of developers. But very little practical use seems to have been made of these discoveries.

SEPIA PLATINUM PAPER. — R. Jacoby, who has for many years paid special attention to the platinum printing process, gives some useful hints on the preparation of a sepia paper. It is well known that this does not keep so well as the black paper, and now Jacoby states that a long series of experiments have proved that this is primarily due to the raw paper base. Animal-sized paper is preferable to resin-sized, and the best thing to do is to give the paper a good sizing of gelatine and then coat with arrowroot. A thick hard paper should be chosen; Whatman's is especially suitable. A 1½ per cent solution of gelatine should be used and 1 per cent of chrome alum, calculated on the weight of the dry gelatine, should be added to the warm solution. This means a solution of:

Gelatine	15 g	115 gr.
Chrome alum	0.15 g	1.15 gr.
Water	1000 ccm	16 oz.

The paper should be immersed in the warm solution and then hung up to dry, and again immersed and hung up from the other end. A 1 per cent solution of arrowroot should be used once or twice in the same way. Or the following may be used:

Arrowroot	10 g	77 gr.
Water	900 ccm	14¼ oz.

Dissolve in the usual way by boiling and when cold add:

Egg albumen	100 ccm	770 min.

The albumen must be whipped to a froth and left for 24 hours and then filtered. The sensitizing solution is:

Normal ferric oxalate solution	625 ccm	10 oz.
Water	375 ccm	6 oz.
Mercuric chloride	45 g	346 gr.
Potassium chloride	60 g	460 gr.
Potassium chlorate	5 g	38 gr.

The normal ferric oxalate solution is that suggested by von Hübl, which contains 20 per cent of ferric oxalate with a slight excess of oxalic acid. For a sheet 50 x 65 cm (20 x 25 in.) mix as follows:

Above solution	8 ccm	135 min.
Potassium chloroplatinite sol.	4 ccm	68 min.

If the paper has a rough surface, add water 4 ccm (68 min.) The chloroplatinite is a 1:7 solution. This should be applied with a brush, which must not be bound with metal (*Phot. Korr.*, 1922, **59**, 31).

BLEACH-OUT PROCESS. — R. Kögel has tried out a new dye of the phenanthrazoxonium group for this process. The dye must be used with alcohol as the solvent and with the addition of hydrochloride acid, when a fine blue color is formed, which rapidly bleaches out on exposure to light (*Phot. Korr.*, 1922, **59**, 40). Dr. Kögel considers this a proof of the theory of the bleach-out process, but it will require more than this to revive this very much deceased process.

BROMOIL TRANSFERS WITHOUT A MACHINE. — Dr. E. Mayer, who has made a specialty of this subject, suggests that it is possible to obtain bromoil transfers without the use of a machine in the following way. Place the bromoil print face down on the transfer paper and obtain contact by stroking. Then place a straight edge parallel with the long side of the bromoil print and with a medium hard lead pencil, with not too sharp a point, rule lines on the back of the print, so close together that no white spaces show in between. If any white lines show they must be gone over again. The pressure to be used must be learnt, but neither should the pencil point itself break nor should the print be damaged. The use of any other pointed instrument is not advisable, unless it gives dark lines, as it is then difficult to see whether any parts have been missed. The use of a bone or ivory paper knife, as a rule distributes the pressure in broad lines and does not act well. It is possible in this way to obtain transfers even on rough papers, although it naturally takes some time. The progress of the work can be examined from time to time by lifting the straight edge and the print. By crossing the lines, the effect of a coarse cross-lined screen is obtainable. Clean and brilliant prints can thus be made and while the process will not replace the machine, it is useful when one has not the latter and especially for small sizes (*Phot. Korr.*, 1922, **59**, 59).

COPPER TONING. — P. Strauss recommends the following bath for obtaining very pleasant brownish-red tones on development papers, and the bath is said to keep well:

Cupric sulphate	3.7 g	28½ gr.
Ammonium oxalate	15 g	115 gr.
Potassium ferricyanide	7.5 g	58 gr.
Chromic acid	1 g	7.7 gr.
Water	1000 ccm	16 oz.

The chromic acid helps to keep the whites clean (*Phot. Rund.*, 1922, **59**, 147).

SENSITIZING NEGATIVE PAPERS. — R. Namias states that slow negative paper for reproduction may be sensitized well with the iso- and carbocyanins. Excellent results were obtained with a bath of 1:5,000,000. The negatives were very dense and clean, especially if before development the paper was treated with phenosafranin, preferably 1:10,000, so as to avoid any deep staining of the paper fibers. The slight stain left after this bath gives no trouble in practice (*Il Prog. Foto.*, 1922, **29**, 108; *Sci. Tech. Ind. Phot.*, 1922, **2**, 65).

INKS FOR BROMOIL. — R. Namias recommends the following medium for making inks for this process: dissolve by heat in a metal vessel 500 g (8 oz.) of gum dammar in 1000 ccm (16 oz.) boiled linseed oil, using a naked fire. The pigments should be mixed with this as required; lampblack, sienna, Prussian blue, chrome yellow, alizarine lake, etc. (*Il Prog. Foto.*, 1922, **29**, 98; *Sci. Tech. Ind. Phot.*, 1922, **2**, 67).

A CORRECTION—On p. 528 of the August issue the formulas for the amidol developers should read as follows: —

Sodium suplhite, dry	31.25 g	238 grs
Amidol	63 g	48 grs
Potassium bromide	3 g	10 grs
Glycollic acid	3 ccm	10 minims
Water	1000 ccm	16 ozs

In the second formula the quantity of amidol should read 69 grs.

PRACTICAL HINTS

GETTING MAILING LISTS FROM THE NEWSPAPERS

FRANK H. WILLIAMS

There are two things that make direct mail advertising especially effective. One of these is a good mailing list containing only the names of such people as are real prospects for the advertiser, and the other is timeliness in the subject matter of the advertisements sent out. When these two things are found together, the results achieved by direct mail advertising are frequently of an exceedingly gratifying nature.

Photographers who are anxious to do everything possible in promotion of business should not overlook direct mail advertising. They will pay special attention to this form of advertising when they realize how easy it is for them to secure mailing lists of women who are live prospects and how easy it is to draft letters that are especially timely to send to these prospects.

The way to do this is to watch the newspapers closely. While it would undoubtedly be possible to secure mailing lists of men's names in the same way, this article is confined to the circularization of women because it is felt that women, as a rule, are more interested in having photographs taken of themselves and of their families than are men.

Every daily paper issued in your city, Mr. Photographer, contains several names that can be used by you for direct mail advertising purposes and every issue of the paper also provides a theme upon which to frame superlatively good sales letters.

Let us examine a daily paper and see just what is provided for us along this line. First of all, as we are seeking to interest women, we will turn to the society columns of the paper, just as many of the women readers of the paper will do. Somewhere on this page we shall see a little paragraph stating that "Mr. and Mrs. John Doe announce the engagement of their daughter, Miss Mary Doe, to Mr. Richard So-and-So." That announcement is not only interesting, but it furnishes a splendid opportunity for us to do some promotion work. Right away, we dictate a letter, somewhat as follows, to the bride-to-be: Miss Mary Doe, City.

Dear Miss Doe: We read the announcement of your engagement in this evening's paper with much interest and we want to offer our best wishes to you for a long and happy married life.

Of course, at this joyous time of your life, when you will be the center of interest for friends and acquaintances, you will want to have some photographs taken in your bridal costume, going-away suit, etc., and in this connection we want to extend to you a cordial invitation to visit our studio and inspect some photographs we have taken for other brides. We are sure you will be interested in seeing these pictures, whether you decide to buy photographs from us or not.

To increase interest among young ladies in our work, we are offering a special reduction of ten per cent on quantity purchases of photographs by brides. We will tell you more about this when you call.

Wishing you all the joy in the world and hoping to have the pleasure of seeing you very shortly, we are,

Very truly yours,
The Smith Photo Gallery.

Of course, if you do not care to give a ten per cent reduction on photographs purchased by brides, you can easily leave out that paragraph.

Would not such a letter probably result in Miss Doe making a trip to the studio to look over the collection of bridal pictures and is it not likely that the studio would make a sale that it would not otherwise have made, as the result of sending out such a letter?

Look through the daily papers in your city for engagement announcements. They are constantly being made and the photographer is provided every time with a ready-made subject for a timely sales letter and the name of a very real prospect.

In addition to this, the feminine relatives of young ladies who are so socially prominent that the newspapers consider it good news to publish announcements of their engagements will also probably want to have pictures taken in the new clothes they have for the wedding, and if the bride-to-be determines to patronize some particular studio, it is quite probable that her relatives and many of her friends will follow her example.

So it is evident that a letter such as we have described may be the means of bringing in a lot of new business.

The engagement announcements are not the only ones that are of interest to the photographer. In the society columns of the newspapers are constantly being mentioned the names of ladies who are attending functions of some sort or another. Such people are real prospects for a photographer, for they generally have money and they generally like to have pictures taken quite frequently. So the photographer would, undoubtedly find it profitable to send letters to ladies who are chronicled as attending parties and to call attention in these letters to the class of work done and to the kind or people who patronize the studio. To receive such a letter would flatter the recipient a lot, particularly if the photographer included in the letter some such phrase as: "We see your name mentioned frequently in the local society columns." If the recipients of the letters felt flattered at receiving them they would, quite naturally, show how they felt by patronizing the photographer.

The news columns of the papers frequently contain material that an alert photographer can use to splendid advantage. In them are found items telling of women's doings in various activities. They tell about women meeting with the city council to take up matters of civic interest; of women forming political clubs; of women being admitted to the practice of law, etc. Women realize fully the value of publicity in securing social prominence or in increasing the success of any enterprise in which they may be interested, so women who are mentioned in the papers in connection with these things are good prospects for the photographer. Live-wire photographers are overlooking no opportunities these days for getting business, so live-wire photographers will not overlook the opportunities presented to them by daily newspapers for doing some advertising by mail

BROOK IN WINTER

ENOS HAWLEY

that will bring results. Cash in to the utmost on the opportunities presented by *your* local daily newspapers.

* * *

AN OFT-FORGOTTEN PLEASURE

GEORGE S. HAWLEY

One of the greatest pleasures in outdoor photography is, I think, often overlooked by the average amateur.

The camerist goes out in an expectant and joyous mood, finds a beautiful scene, and takes a photograph of it. The plate is developed, a print made, and, in many cases, great disappointment is felt. The print may be fairly good, but the result is so entirely different from the *real picture* the camerist saw that it is wholly unsatisfactory.

I have had many such experiences; have thrown away scores of plates and put aside as many more, solely for this reason, wondering what the trouble was and why my pictures (to me) were such failures.

One day I discovered the secret. I was beginning to understand, thanks to our fine photographic magazines, most of which I take and read, that *real* picture making does not consist in a blind and mechanical reliance on the lens and the straight print, but that it may be made "the expression of one soul talking to another." I learned, too, that I was not using the proper medium for the purpose in mind.

Then I began — again inspired by articles in the magazines — to experiment with carbon, oil, oil-transfer, bromoil and gum; each beautiful and each necessary at times to the exclusion of all the others. The most elastic, however, and the one that appeals to me as being usually the best for putting into the picture "that which nature does not possess, namely, the *mind and soul of a man*," is the gum print.

This making a picture part of oneself is the "oft-forgotten pleasure," and it is not difficult either. I made some very good gums before I ever saw a gum by following Mr. Zimmerman's luminous article in "The Photo Miniature." Then, of course, I read other articles and books on the subject. With patience and common sense these beautiful processes to which I have referred may be made the willing servants of the amateur who has a message to give and wants to give it in an appealing way.

Two or three years ago, rather late in the afternoon of a beautiful day, I found what I thought was a picture. I took it, developed the plate and made a print. The plate was a poor one and so was the print. I tried everything from Azo to ZZ Platinum, but without success; the real picture was not there, there was no soul in it.

I put the plate away. After a year or two, when I took up gum, I tried it again, and then I was able

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ɪs to level up the distant shore
Such lines should be followed
ɪs of the film for it is seldom
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tures lack stability and repose
be running down hill or when
; over or leaning backwards.
e result of tipping up a hand
e in the top of a tall building.
ɔorrecting this effect in enlarg-
bed, but we were not quite
we perfected the device shown
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a small transom lift.
in so that the image shows up-
ɛl is swung out until the lines
arallel with the marginal and
sk. Careful focusing is neces-
using the swing back of a view

ing lenses and 100 Watt lamp
satisfactory lighting for 4 x 5
ɪatives, so we have installed a
lecting condenser, using a 300
a lamp. This gives good illum-
ive up to 5 x 7.
of an adjoining room which is
ɛ sake of avoiding too much
ng ventilation, we were con-
ɔroblem the solution of which
hose who are similarly situated.
shutter in line with our en-
y was used with daylight) and
is mounted on the outside of
ɛd on a strong wooden bracket,
ɔrizontal adjustment of about
ar opening the size of the reflec-
ɛer and a light-tight connection
ɔack. A weather-proof hood is
r exposed parts and to permit
. Both the outside and inside
ounting board, a double-faced,
where bending was necessary
for the top and bottom of the
de pieces of the latter were cut
ɪch lap, edges moistened before
ɛrs glued before fastening to the
methods of clamping were used
ieces of board in place while the
l, rusty carpet tacks put through
at holding power, were easily
oles were covered with corner
r. For clamping near edges, a
ring clothes pins were used to
hese simple little tools have
ɪnctions about a photographic
least of which is in handling
ɔer and hypo. For the purpose

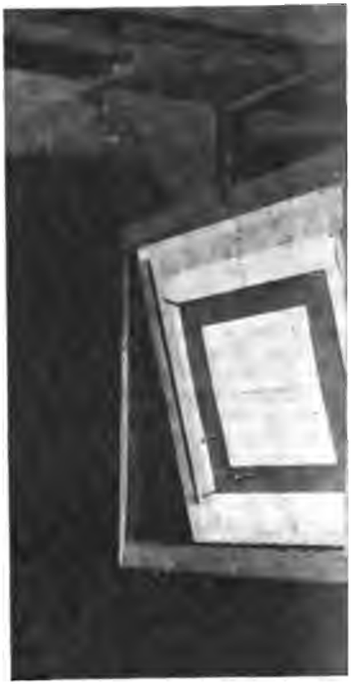

Fig. 2

the ends need sharpening a bit.
edge of each tray when not in use
your fingers dry and your prints
The inner end of the hood w
camera back was reinforced with
x 5-16", glued and tacked to the
tacks. All corners and angles v
with strips of opaque black paper p
an inside cover to shut out the li
ing, etc., made after the manner
pleted this part.

The outside hood was slashed
squares about 1" x 1", turned up
tacked to the shutter as the hood v
The other edge was cut with wedg
the flaps could be turned down wi
and fastened to the end piece.

White oil-cloth was pasted and
side of the hood and shutter and
with melted paraffin. As a test
may say that the paraffin has n
extent even during a thirty min
and this suggests that the lining of
hardly necessary.

The shutter is hung on loose
detachable, and may be hung on
out of the way on the track or li
when not in use.

Fig. 1 shows the shutter hangi
the outside hood in the foregro
extension in place, inside cover p
light which is lighted to show up
of the hood, etc.

Fig. 2 shows the remodeled ea
back tilted to about the extreme
for 8" x 10" prints in place.

criticism. The childre
not too *energetic intere*
do not convey that fe
should be there.

One who has been a
anything that would ca
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structed. For example.
almost naturally *jump u*
better.

The picture was taken
strikingly natural *picture*
had the child to the *left*
while the one to the right
to left of the center *of a pi*
form, thereby allowing sp
ing to enter the picture. T
one that really *needs criti*
though the originator trie
which was produced. —
Detroit, Mich.

OTHER CR

In looking at the New F
No 33. "See What's Comin
first glance shows *that there*
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second one indicates the fact
ing is at fault.

Now, disregarding the light
we could otherwise improve
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alteration makes. If the ca
upright so as to *make* a vertic
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children. As it *is now*, the to
ground is cut off. The picture
taken from a little farther *distan*
a trifle more foreground and g
spective.

Now as to the lighting, *it is*
comes from a point too far over
an unnatural lighting of the c
makes the top of the steps *look*
tending across the picture. Thu
faults which were caused by:

First — The camera *being h*
horizontal instead of a vertical p

Second — The light came fron
overhead, causing bad *lighting of*
front of the steps to appear in sha

The expression of the children's
and this, together with *their* att
perfectly with the subject of the p
tion were given to the faults m
believe this picture would *present* an
aspect — Elmer J. Zufelt.

Good material gone *to* waste.
definite motif thoughtfully hand
brooms so stiffly held? Wm. Morri
to have nothing in their *homes* which
ful or useful This applies equally
employed in producing a pictorial co
in the present instance the brooms are
ful nor useful

The steps are no doubt useful *to m*
household, but their representation b

criticism. The children, while showing a slight but not too energetic interest in that which "is coming," do not convey that feeling to the onlooker that should be there.

One who has been around children knows that anything that would cause a child to exclaim "See what's coming," would also cause bodily action and expecially so when the child's view is slightly obstructed. For example, the child to the left would almost naturally jump up and stand, in order to see better.

The picture was taken in the wrong position. A strikingly natural picture would have been produced had the child to the left been in the act of rising while the one to the right was standing, placing them to left of the center of a picture taken in the vertical form, thereby allowing space for that which is coming to enter the picture. This type of a picture isn't one that really needs criticism, as it doesn't seem as though the originator tried to be serious in that which was produced. — F. B. Marchialette, Detroit, Mich.

OTHER CRITICISMS

In looking at the New Readers' Criticism Print No. 33, "See What's Coming," I would say that the first glance shows that there is something radically wrong with the background of this picture and the second one indicates the fact that the general lighting is at fault.

Now, disregarding the lighting, let us first see how we could otherwise improve this picture. Cover up an inch of the right-hand end of the picture and see how much of an improvement even this little alteration makes. If the camera had been held upright so as to make a vertical picture, less of the steps would have appeared and we would have a better view of that part of the house behind the children. As it is now, the top part of the background is cut off. The picture could also have been taken from a little farther distance away, thus adding a trifle more foreground and giving a better perspective.

Now as to the lighting, it is apparent that this comes from a point too far overhead. This causes an unnatural lighting of the children's faces and makes the top of the steps look like two shelves extending across the picture. Thus we find two main faults which were caused by:

First — The camera being held to produce a horizontal instead of a vertical picture.

Second — The light came from a point directly overhead, causing bad lighting of the faces, and the front of the steps to appear in shadow.

The expression of the children's faces is excellent, and this, together with their attitude, harmonizes perfectly with the subject of the picture. If attention were given to the faults mentioned above, I believe this picture would present an entirely different aspect. — Elmer J. Zufelt.

Good material gone to waste, due to lack of definite motif thoughtfully handled. Why the brooms so stiffly held? Wm. Morris advised people to have nothing in their homes which was not beautiful or useful. This applies equally to the material employed in producing a pictorial composition, and in the present instance the brooms are neither beautiful nor useful.

The steps are no doubt useful to members of the household, but their representation by sharp bands of black and white running entirely across the picture-space is distracting.

A third of the entire print upon the right-hand side could well be removed, and about half the area between the left margin and child nearest that side, leaving an upright rectangle. An assortment of clapboards, door-panels, and black spaces does not furnish an agreeable background. Exposure altogether too short to give proper gradation — result, inky black shadows, and chalk-like whiteness in the children's costumes.

Should the steps be utilized again as a setting for a sitting, have them in perspective, thus avoiding repetition of parallel lines in an undesirable manner; get the attractive young models interested in some object or occupation which will speak for itself, and look for a simpler background.— William S. Davis.

On the steps is one of the worst places to take a picture, because of the straight lines of the steps. If the picture has to be taken on the steps, it is best to have the sun lower in the sky, so the harsh white lines of the steps would be taken out.

The doors should be closed behind the girls, because the open doors make big dark spots in the background.

With so many horizontal lines on the steps, there should be more vertical lines so the picture would not look as if it had been made in layers.

The girls are too near the center of the picture. The right-hand girl should have on light stockings like the other little girl, and the broom she is holding should be taken out from behind her head, so that it would not look as if it was sticking out of her head.

There is something wrong in this picture that makes the white parts seem too white and the dark parts too dark, but it is impossible to tell what it is, because we were not told how the picture was taken or developed or printed. I should think it was underexposed.

The taker of this picture has not made the same mistake many people do, of having the girls look at the camera, but it would have been better if they were looking at something that is shown in the picture.

If you should draw a line between the two girls and trim off the edges you would make two little pictures that are both better than the big picture. If there was something near the center of the picture or between the girls that they were both playing with, there would not be any divided interest as there is now in this picture. — Geo. T. Crawford.

(Note by Criticism Editor. — We are informed by the maker of this picture that both the girls are boys).

It would be interesting to mentally reconstruct the conditions under which this picture was probably taken. The tots were playing soldier, — a broom to that age has a stronger military than domestic significance. The photographer saw a golden opportunity and seized it — together with his hand camera. He might well have snapped them on the march, but convention was too strong for him and he told them to sit down "and have their picture taken." Fate was with him, however, in attracting their attention, and a charmingly sincere and unconventional pose is the result. Quick action was necessary and the camera was titled in the shuffle, but the snap was made at the right time, and, after all, in pictures of children that is the important thing.

This matter of holding the camera level is of

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Satisfactory tonal qu
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It has long been *regarde*
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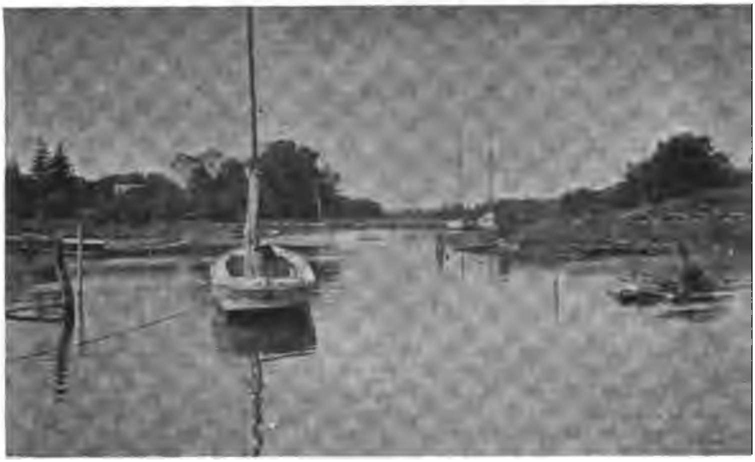
of softness wanted in *an enlar*
and reduce the diffusion in the
ately to the number of diamete
have to bear to make *a print*
This may seem difficult of a
experience is a good teacher, an
tives not smaller than *3¼x4¼* wi
ing enlargements of only two or
is possible to judge the effect *q*
nicety of focusing is, *of course*, ou
snap-shot work and when worki
pocket cameras. Under these co
plan is to get as sharp definition as



New Criticism Print No. 36

l quality.

e.

lefinition which will give the character one would aim to contact from a large direct

:chanical defects.

ılity is that which adequately dations existing in the scene xpresses the idea it is desired ements usually show more rints upon the same grade of :o keep the negative rather t the illuminant used pene- possess gradation.

ge in a gelatine emulsion is t is especially important to sible in small negatives which high degree of enlargement. gely a problem for the plate e, full exposure and employ- per tend to give an image of . Where possible, the use of the ultra-rapid grades favors grained image. (See note

rded as essential to focus as en making negatives with a it this is not always the best fusion, particularly differen- different planes, is needed to ression, an effort should be negative, when the image is han by scale. In doing this, to keep in mind the amount enlargement of a given size, ı in the negative proportion- liameters enlargement it will a print of the size required. ılt of accomplishment, but :her, and when making nega- ¼x4¼ with a view to obtain- y two or three diameters, it : effect quite closely. Such course, out of the question in ıen working with miniature these conditions the wisest efinition as possible, trusting to other means of introducing diffusion in the when this seems necessary.

Freedom from mechanical blemishes, such as holes" and scratches, is obviously essential i would avoid the necessity for a lot of difficu touching upon each print. Clean negatives are insured by dusting the interior of camera and holders frequently; keeping all solutions free sediment; never touching the sensitive surface plate or film with the fingers, and, as the negat taken from the washing tank, *very gently* wiping sides with a wet tuft of absorbent cotton setting up to dry. — W. S. Davis, Orient, N.

Note — Mr. Davis's advice regarding th of slower plates in place of the ultra-rapid g should be accepted with some reservations. Th point here is not so much speed or lack of latitude in exposure. On this score the literatu photography has not kept pace with the progr emulsion-making. It is still assumed that wh emulsion of medium speed can be overexposed impunity, a really fast emulsion must be ex pretty near right or it will "turn over," bec flat and "blocky," with the coarse-grain effe ferred to above. For this reason advanced ama who run to time exposures with a tripod, have chary of extra-fast plates and films, but mean emulsion-makers have been concentrating or problem of producing fast emulsions that do no over as formerly with full exposure, and remar strides have been made in this direction, greater results may be looked for along these in the next few years. The best fast plates and are now so much better in respect to latitude was formerly the case that a generalization o subject is no longer safe, and the only wise c is to observe the behavior of the particular em you are using and be guided accordingly. Fu it may be said that excellence is not necessari sured in a plate or film because it happens to be for lack of speed is often a sign of short regist too few steps in the scale to render all the tor the picture with fidelity.

DECEMBER QUESTION FOR READE

What kind of pictures are best suited to ti

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obtain a supply b

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is excellently fille
pleasing. This wa
View camera fitted
exposure in a studio
ed light together wit
August was ½ secon
film was developed
Vitava Athena M. W

The second prize w
for his portrait of Rob
vincing piece of work, s
ment and treatment a
face of the man port
would have materially
with a 5 x 7 Seneca ca
inch Verito lens. The e
kee by artificial light i
trait film was develop
Portrait Bromide D rou

The third prize was aw
for "Winter in the Weld
rendering of snow. No
print beyond reproach, b
a vista between the hea
pleasing and interesting.
Mass., with a vest pocke
3-inch meniscus lens. T
in February in bright lig
stop No. 2. The Eastman
with amidol and enlarged o

Honorable Mentions wer
Ready for the Flight
A Doorway
I Spy
A Glimpse of the Brook
Apple Blossoms
The Tug
Summer Landscape
The Athlete

Commendations were awarde
Gorge and Lower Falls—Letch

Into the Valley and the Shadow
Filling the Silo
Outdoor Portrait R
The White Blouse
Into the Hush of Eventide
Beyond

:e this exhibition will let us hear from them
ırly date, we will endeavor to work out a
which will cover as many places as possible.
ɪ suggest that two weeks be the maximum
:xhibition, as it is necessary to allow on the
week or more between exhibitions.

SENIOR COMPETITION

of the magazine occasionally write to us
particulars as to the competitions, saying
ıgh the results are published every month,
:ion is given as to who is eligible or as to
;hould be submitted. It is our intention
he full rules of the competition each
e advertising pages, although they are
eft out. Readers who do not desire to
etition blanks from the magazine may
ly by writing to this office for them.
ize in the October senior competition
to M. L. Shattuck for his charming
ɪ "Frivolity." "It seems to us that this
resses the light-heartedness of youth
tures, costume, and pose of the young
spect carry out the title. The space
illed and the whole impression is
was made with an 8 x 10 Eastman
ed with a 14½ in. Verito lens. The
dio in northern New York by diffus-
with 6 150-watt lamps at 2 P. M. in
:ond at f:4. The Eastman portrait
:d with pyro-soda and printed on
White.
e was awarded to E. W. Tetzlaff
Robert DeLand, a direct and con-
k, solid and massive in its arrange-
t as befits the strong lines of the
ortrayed. A light background
lly weakened this print. Made
camera equipped with an 8¼
: exposure was made in Milwau-
: in March at f:4.5. The Por-
ɔped in pyro and printed on
ough.
awarded to Alexander Murray
ld Woods," a very interesting
lot only is the quality of the
but the arrangement showing
:avy masses on each side is
;. Made in West Roxbury,
:et Kodak equipped with a
The exposure at 2.30 P. M.
ight was 1-25 second with
ın N. C. film was developed
on Defender Velour Black.
ere awarded as follows:
John H. Becker
Fred E. Crum
Juventino Ocampo
H. B. Rudolph
Walter Rutherford
J. H. Saunders
U. Shindo
Mrs. S. Smith
rded as follows:
:chworth Park
F. E. Bronson
low Edwin B. Collins
Robt. Edgar DeLand
J. H. Field
Theo. M. Fisher
J. K. Hodges
Jiro Ito

Stony Brook Falls C
On the River Bank
An English Garden
The Dream Castle
Home Portrait
The Pile Driver
Bend in the River]
Winter Sunset
By the Silvery Rio Grande
Evening Splendor
Modern Mill Dam
The Squatter's Cabin
The Porch
The Old Susquehanna River
Fall Trees He
The Turn in the Road

JUNIOR COMPETIT

The first prize in the Junior
awarded to Harold C. Alley for "
the Park," a story-telling picture of
and much interest. Whether pos
the incident is well worth photog
foreground and background are ex
This was made with a 2¼ x 3¼ R.
with a 6-inch Wollensak Velos
exposure at 4 P. M. in April in
Portland, Maine, was 1-25 secon
Premo Film pack was developed in
on Artura Carbon black D.

The second prize was awarde
Louis for his character study of a "N
As the subject of this picture is a y
South, we can but assume that the
hind Broadway in its modern tende
American girl is more or less of a
whether photographed under the b
or, as this one is, "far from the
The attitude certainly suggests the
of youth to be a bit definant of tr
worn opinions. Made with a 2
equipped with an f:7 7 anastigma
at 2.30 P. M. in July in good light
nessee, was 1-25 second at full ope
man Speed film was developed
hydrochinon and printed on Eastı

Honorable mentions were award
The Spiral Staircase \
The Wood Nymphs
Rev. P. — Portrait Study
La Pica Sir
Uncle John
Rapids & Pools
The First Fall
Yellow Currants

Commendations were awarded a
When Brother Wouldn't Pose
A Puff — but no Powder
Along the Skokie
Autumn Sunlight
Oh My Mrs
"Allesamee You Makem Fix"
In the Animal Tent Fı
The Gourmand
The Coming Storm
Kansas University F
Lover's Retreat He
In the Tropics
Along the Hudson
The Fisherman's Shanty
Sunset
A Grey Day in Autumn

based. The group contains
skilled exponents of bromoil
by which processes most of t
produced. In fact, Dr. Emil
of the club, has carried the tec
point considerably more adva
other writer on the subject.
process is a masterpiece of te
clear and lucid exposition.
mention here that we have
translate this book into Engli
the process of publication.
about the first of January, i
size and style to "Practical C
a probable price of $2.00. It
tions on the subject of brom
fer, together with the directi
inks for the process. It is rat
books on the subject in that i
line of procedure without va
step of the process with the u
against pitfalls, and details
and so leads the reader st
beginning to a successful com
ing process. We are sure th
are interested in pictorial p
book will give them a means o
most value.

To return to our pictures.
doubtless has as its foundati
The moment for making the e
so happily chosen that the r
pleasing. The rush of one bi
is strongly contrasted with the
the other, and we are left to gu
of this unusual activity. The
estingly spaced. Page 749.

"Unter Den Lauben," by Bet
the charm of an old world court
ing study in figure posing and
ing is most interesting and t
against lights well calculated t
picture and to carry the att
distant plane beyond the arch.

"Study," by Johannes Kron
Annie Hatschek, are two inter
The ingrained action of a lifeti
and strife imparted to ancient
hazards of life, the character
attire and gesture which belon
ways an attractive study for
two pictures differ markedly i
treatment, but both are excelle
portraits. Pages 760 and 761.

"Surf," by Adolf Fritz, like t
this worker, is the result of a s
Mr. Fritz delights in seizing m
nature. In the present instance
masses of broken water and spra
is far more than literal. It does
pression of suddenly arrested m
as if the wave were still in the a
were likely to crash forward at us
is an unusual achievement in
Page 770.

"Churchyard in Winter," by
quaint and interesting architectu
subject and treatment show the
thought and successful action. P

"Portrait," by Johannes Kro
study of the full flush of youth an

The group contains a number of highly
xponents of bromoil and bromoil transfer,
h processes most of the work of the club is
d. In fact, Dr. Emil Mayer, the president
ib, has carried the technique of bromoil to a
nsiderably more advanced than that of any
iter on the subject, and his book on this
a masterpiece of technical knowledge and
lucid exposition. It may not be amiss to
ere that we have acquired the rights to
his book into English and that it is now in
s of publication. We hope to issue it
first of January, in a volume similar in
le to "Practical Color Photography," at
rice of $2.00. It will contain full instruc-
subject of bromoil and bromoil trans-
with the directions for preparation of
rocess. It is rather different from most
subject in that is describes but a single
lure without variations, explains each
ocess with the utmost precision, warns
s, and details all possible difficulties,
the reader step by step from the
successful completion of this fascinat
Ve are sure that all our readers who
in pictorial processes will find this
em a means of expression of the ut-

our pictures. "On the Park Lake"
its foundation a casual snapshot.
making the exposure was, however,
n that the result is unexpectedly
ish of one bird with erected wings
sted with the calm contentment of
are left to guess what is the cause
tivity. The composition is inter-
Page 749.
en," by Betti Mautner, combines
world courtyard with an interest-
posing and lighting. The spac-
ing and the contrast of darks
lculated to make an interesting
y the attention through to a
the arch. Page 759.
nes Krone, and "Portrait," by
two interesting studies of age.
f a lifetime, the marks of wear
ancient countenances by the
haracteristic peculiarities of
ch belong to the old, are al-
dy for photography. These
rkedly in arrangement and
excellent and characteristic
nd 761.
, like the other picture by
of a snapshot. Evidently
zing momentary phases of
istance, he has caught the
d spray in a fashion which
t does not give us the im-
ted motion, but we feel
the act of breaking, and
at us as we look at it. It
t in surf photography.

" by Karl Suchy, is a
hitectural study. Both
w the result of careful
on. Page 771.
Krone, is a pleasing
uth and is also a direct
and extremely well balanced portrait. P

"Mirage," by Karl Suchy, is a landscap
might have been made in New England, a
any external characteristics go. The birches
of another species, are not greatly different
New England birches in habit and general
ance. Page 783.

The prints reproduced on pages 751, 753,
757 were all awarded prizes in the recent
tion of the Graf Optical Company, the fi
having been awarded to "Chemistry"
Outerbridge, Jr. This is an excellent exa
the modern tendency to discover beauty i
unusual line arrangements and in the fine
rendering of textures and qualities. The
values of the glass and porcelain are most suc
rendered in this picture, a tribute to the exce
the lens. The complex arrangement of
bears witness to the artistic ability of the m
the happy arrangement of these variously
objects undoubtedly required much ti
experiment. It does not seem to us that a
of this type will give much lasting pleas
would it be accepted as a suitable wall de
by any one but an enthusiastic chemist,
man who can solve this problem of spaci
factorily has it within his power to produ
photographic results which will be picture
than experiments in pattern.

Mr. Alcock, in his "Landscape," has taken
as difficult and uncompromising as the mo
the retort, and has also woven them into a
which is attractive. It comes somewhat n
right to be considered as a picture, but
mournful and gloomy in its essence to mak
holder permanently happy and, although it e
a mood which is worthy of representation, ca
considered as a successful experiment for
folio and not as a true picture.

"Industry," by J. R. Mason, is the rec
passing moment which has some interest an
tiveness but which is also a mere glorific
ugliness and an attempt to gloss over what
but a blot on the face of the earth by p
from it a simplified rendering which shall
inordinately offensive. The pictures of t
slangily designated as "big business pict
pictorial circles, may serve as interesting r
our complex civilization and as specimen
arrangement of lines in attractive patterns,
will never fulfil the highest mission of pho
or any other graphic art, which is to giv
pleasure to passing generations.

"A Pose," by T. O'Conor Sloane, does
one of the eternal verities, for, as long as
born to live and love, the sensuous curves an
ed outlines of the human body will give ple
man and woman. The photography of th
body as a whole or in part, clothed or un
will always remain a fit subject for photogra
a successful portrait of a human being w
presses character will always be a source o
and admiration. Mr. Sloane's treatmen
subject is rather slight, his model is constra
fearful of recognition, and the pose of the lef
unfortunate, but the modeling of the torso h
of interest.

The "Portrait" by Minya Dührkoop-Diez
775 is a bit pasty and flat in tonal values,
excellent bit of posing and straightforward
ture.

The Exposure.
Bulletins by Ora
The Associati
clubs in as m
members contai
clubs in America
motion and cu
photography.

While the *p*
mentions in ou
on exhibition in
the Reverend *H*
the *Boston Trans*
some omissions, i
that there *are son*
application than a
That photograp
again by *the ex*
PHOTOGRAPHY. Sc
ticularly impressiv
of space. *Probabl*
significant, that the
exhibition form a de
the scene.

Thus the first priz
Alva, Scotland, who
suggests *unmeasured*
suggests endlessness.
clouds suggest the wi
stretches *of the moor*,
the impression of dist
middle distance, the s
driven by *the wind*, *g*
picture but conveys th
solitude.

The picture *which* wo
also for its impression o
element in it. But its *p*
ing stream *with* snowy b
Scene" and is by Raymo
the Union Camera Club.
forms the background sc
the unlimited perspective
Again, however, the *swee*
for the exquisite lines ca
effect.

Narrower still is *the s*
Sunshine, Pump Court,
Prior of Chingford, Englar
An area shut in by *tall ivy-*
dow except for sunshine.
floating mists. The paver
which has just passed. *Th*
light from the newly opene
tree, gaunt and black, is not
figure with an umbrella *add*
the April day.

Narrowing the scene still *f*
picture presents just *a human*
face confirms the title "Portr
by the artist, Wayne Albee
heavy, black cloak is in *slig*
unbroken deep gray of the ba

In looking at the most succ
teresting to make a psychologic
how the effect of the pictures is
of them use very simple elemen
with detail are not so successful
seeing consciously or unconscious
is actually recorded in the *pict*
prize. Treeless undulating land,

:xposure, of the Chicago Camera Club, and
ins by Orange, Elysian, Dallas and other clubs.
Association to-day is comprised of thirty-four
n as many different cities. This list of
rs contains practically all of the well founded
America which are co-operating for that pro-
and cultivation of the science and art of
ıphy.

the prints awarded prizes and honorable
in our second Annual Competition were
ion in the Boston Y. M. C. U. Camera Club,
end Henry Hallam Saunderson wrote for
Transcript a review of this which, with
ions, is reproduced below, for the reason
re some thoughts in it of much broader
than a description of this exhibition:

:ography has become a fine art is proved
ıe exhibition arranged by AMERICAN
Y. Sometimes the camera does par-
ıressive work in presenting the feeling
obably it is incidental, but yet it is
ıat the first four prize winners in this
n a descending scale in the vastness of

ıt prize goes to John M. Whitehead of
I, whose picture "Across the Moor"
ısured distances. The winding road
sness. Great masses of wind-swept
he width of the world. Undulating
noor, with a vast perspective, add to
ıf distance. A single house in the
the smoke from its chimney being
nd, gives a human interest to the
:ys the thought of the vastness of

ch won second prize is remarkable
ion of solitude, having no human
its principal interest is in a wind-
ıwy banks. It is called "Winter
ıymond E. Hanson, a member of
Club. A dense thicket of woods
nd so that the picture has not
:tive of the winner of first prize.
sweep of the wind is recorded,
s carved in the snow show its

ıe scene portrayed in "April
ırt, Temple," by George F.
ıgland, winner of third prize.
ivy-clad walls is in deep sha-
ıine, which filters through
avement is wet from rain
There are little gleams of
ıened leaves of the ivy. A
not yet in leaf. A human
adds to the significance of

ll further, the fourth prize
ıan figure. The fine strong
ırtrait of a Player," given
ee of Seattle, Wash. A
slight contrast with the
background.
successful prints it is in-
ogical analysis and to see
:s is produced. The best
ements. Those crowded
essful. The spectator is
sciously, vastly more than
picture that took first
land, and dense masses
of cloud are actually pictured, with a roac
and a whiff of smoke. Nothing else wha
physically present in the print. But th
of the spectator goes on to add much.
picture is remembered it is difficult to say
contributed by the mind of the spectator
was physically recorded in the print.

Scores of pictures in this exhibit might l
illustrate this important truth. One of th
achievements of work of art is that it star
processes in those who look upon it, these
being often so subtle as to defy analysis,
being creative to a high degree so that the
becomes a collaborator with the artist. W
tographs do this, it is evident that photog
won the place for which it has long conte
one of the fine arts.

The Dallas Camera Club continues to
at weekly or other intervals a very intere
amusing mimeographed bulletin. Fror
issues of this we learn that the club inter
corporate and that its activities are vari
such a nature as to keep its members cc
interested in photography. Meetings, de
tions, competitions and exhibitions are or
gram and considerable fun is thrown in
measurement. That the members love ea
as is the case of all well conducted camera
shown by the following clipping:

Once upon a time (as all good fairy stori
begin) a little photograph came down to
rooms and was placed on the walls for th
tion of the members. This little photog
Aspirations—with a capital A. It honed to
rial. It came of good stock, its developı
been slow and even, it was well fixed, anc
hoped that it had attained the class in
distinguished brethren moved and had th
But, said Morton:

"Now, if it had been retoned blue or gre

"It should have been printed on Veltex,
added.

"If he'd used a Protar," supplemente
seriously.

"It's not fuzzy enough," Brown disagree

"It might have made a good lanter
thought Sutton.

"He should have made a stereo," said N

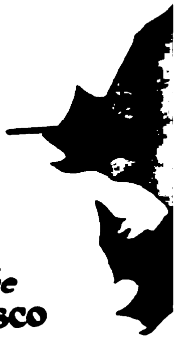
"It's rotten," snarled Minor, summin
opinion of the crowd.

And the poor little photograph, sadly disi
went home and was buried in the bottom c
never to see the bright sunshine any more.

MORAL — Pay no attention to what
fellow thinks of your picture. A camei
the most opinionated critter on earth.

The Boston Y. M. C. U. Camera Club is
to the minute in its activities. It not only
AMERICAN PHOTOGRAPHY prize pictures d
month of October but it secured the reproc
eight of them as a full page in the rotogravu
of the Boston *Sunday Herald* and annou
exhibition by radio to forty-five thousand
It also arranged to have three ten-minute
photography broadcasted by radio on Oc
November 2, and November 9. The club
produced ten photogravure postcards o
which are undoubtedly the finest set of c
cards yet produced in the United Stat
subjects are typical of old Boston and e

The C
This



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DECEMBER, 1922

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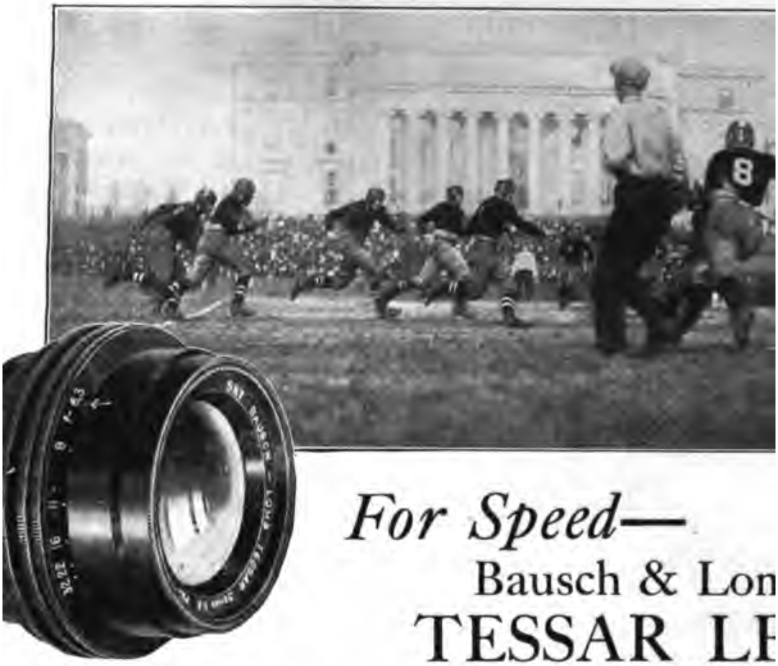

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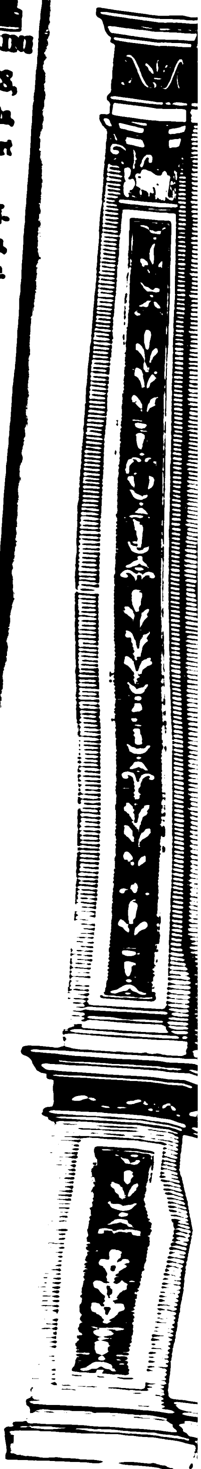

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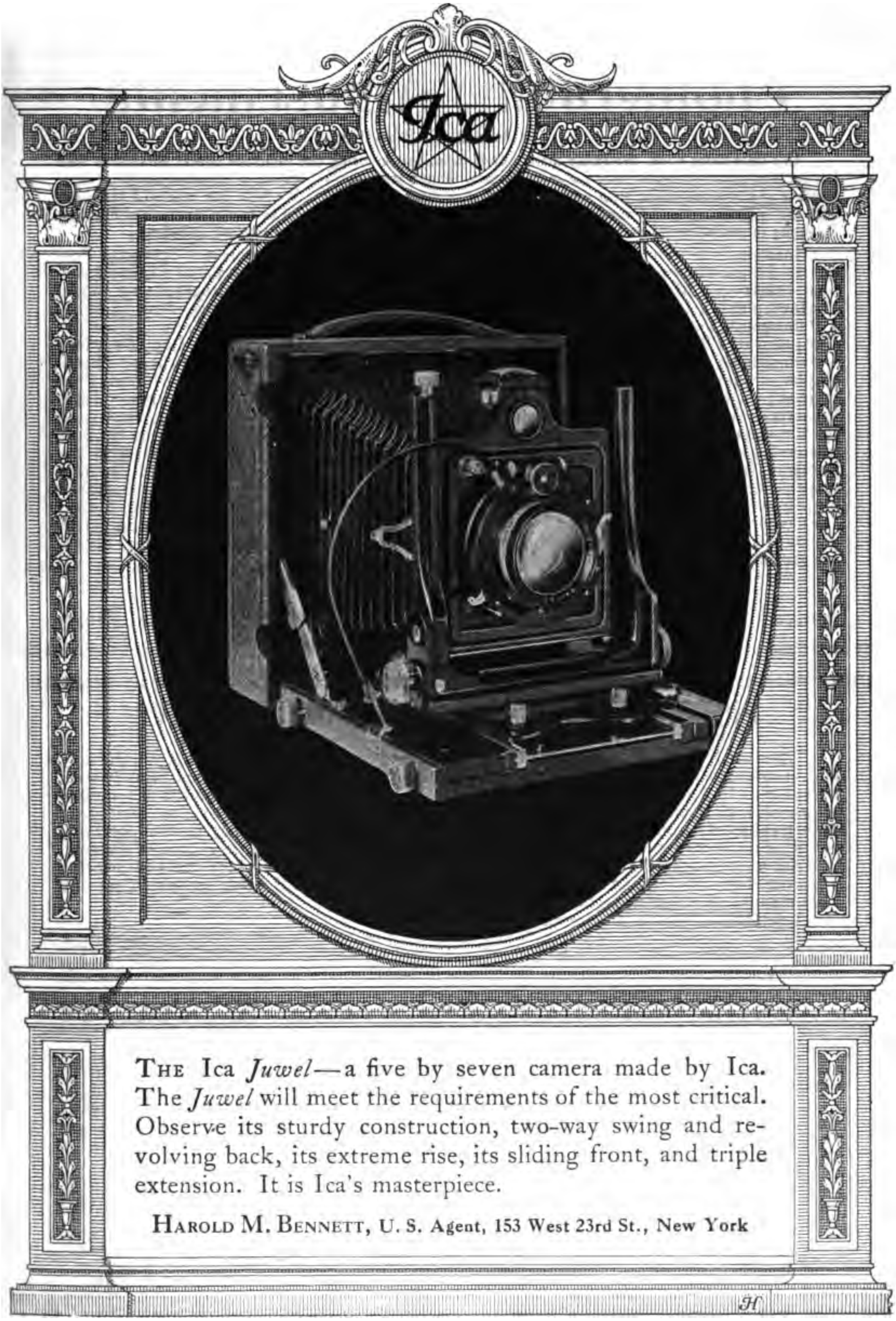

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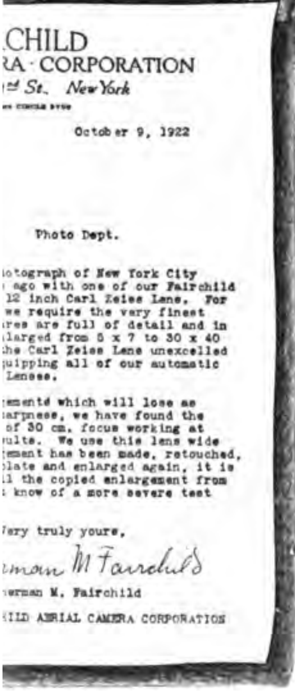

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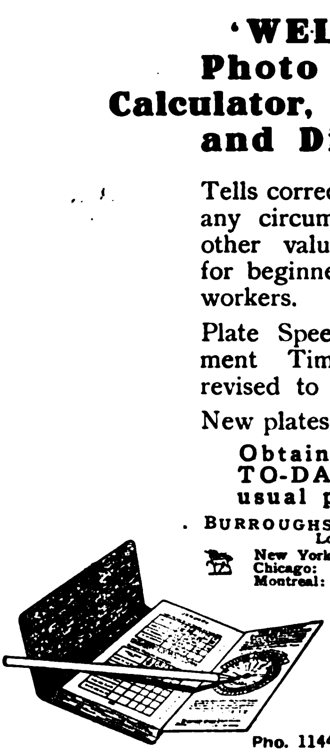

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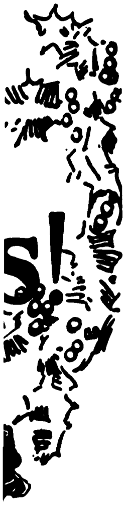

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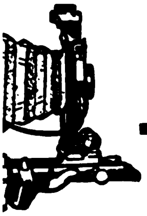

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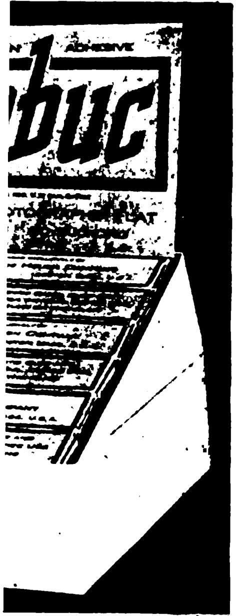

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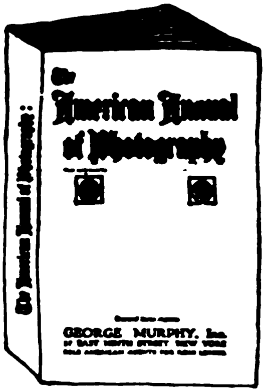
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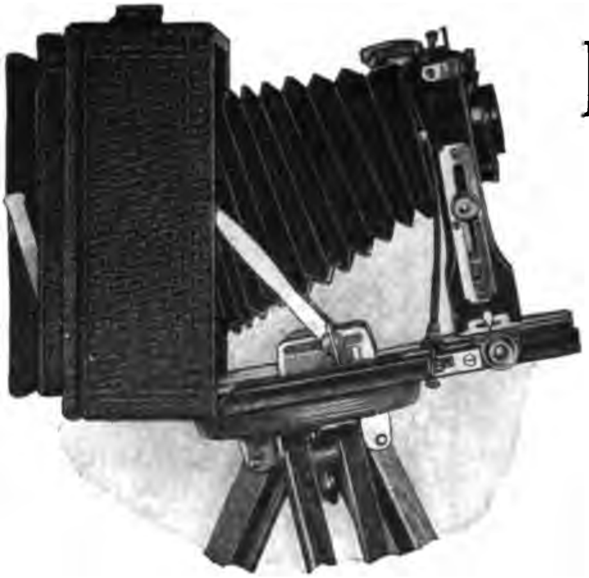

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Pictures 2¼ x 3¼

WHILE the famous, sharp-cutting Kodak Anastigmat lens *f*.7.7, with shutter speed controls of 1/25, 1/50 and 1/100 of a second as well as time and bulb action, immediately gives this camera photographic prestige, the No. 1 Pocket Kodak, Series II, has other distinctive features.

The self-erecting front makes it a quick-action Kodak—the lens automatically snaps in position as the camera bed is dropped.

The focusing device puts the correct focus at your finger tips. Instead of the familiar scale on the camera bed, the focus is secured by a slight turn of the lens flange and exact focus is thus established from 5 feet to 100.

Autographic, of course, with the new design, counter-sunk slot; well-made and handsomely finished.

Everybody likes pictures — and here's an ideal camera

EASTMAN KODAK COMPANY
ROCHESTER, N. Y. *The Kodak City*

One of the practical features of the

Kodak Auto-Focus Enlarger

Close up of camera showing auto-focus mechanism and enlarging scale.

To enlarge the dimensions of the negative the desired number of times, you have only to set the camera according to the scale on the back of the upright standard.

Insert the negative, adjust the paper, turn down the exposure lever for the required time and the enlargement is made. The focus is adjusted for you by the automatic focusing mechanism.

The enlarger takes either plate or film negatives up to 4 x 6 inches and makes prints on Bromide paper up to 14 x 21 inches.

Kodak Auto-Focus Enlarger, complete with Kodak Anastigmat lens, negative holder, paper holder, set of flexible metal masks in six sizes and electric cord and plug, but without the 60 watt Mazda lamp for illumination	$35.00
Diffusing disc for soft focus effects . . .	1.00

Prices include the Excise Tax

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At your Kodak Dealer's

The Kodak Amateur Calendar for 1923

An attractive gift
with a personal touch

BECAUSE of the mutual interest of the snapshots you put in them, the Kodak Amateur Calendars are ideal for holiday giving. Their conservative, yet attractive appearance, makes them appropriate for the writing desk, den, or library.

Style A or B, with rough grey mottled surface, green and silver decorations, for vertical prints hangs from a tasselled cord.

Style C or D, with rich brown mottled surface, gold decorations, for horizontal prints, has a double flap which acts as a standard, adapting the calendar for desk or table use.

Price each, with attractive mailing envelope

Styles A and C	. . . . (For 1⅝ x 2½ or 2¼ x 3¼ prints)	$0.20
Styles B and D	. . . . (For 2½ x 4¼ or 3¼ x 5½ prints)	.25

EASTMAN KODAK COMPANY
ROCHESTER, N. Y., *The Kodak City*

At your dealer's

Kodak Cut Film

Where light conditions are unfavorable as in indoor work, or exposures short, as in "action" pictures, the extra fast emulsion required is found in Kodak Cut Film, Super Speed.

And this is secured without sacrificing the qualities of latitude, gradation and fine grain necessary to film quality.

The regular Kodak Cut Film is equal in speed to the best portrait plate emulsions and of course has the obvious cut film advantages of being easy to handle, light in weight, non-halation, and unbreakable.

The Kodak Cut Film Sheath permits the use of Kodak Cut Film in any plate holder, and with the Combination Back, both regular and special models of the Nos. 3 and 3A Kodaks can be adapted for its use.

Prices

	2¼x3¼	3¼x4¼	3¼x5½	4x5	5x7
Kodak Cut Film, Regular Speed, doz	$0.46	$0.67	$0.93	$0.93	$1.50
Kodak Cut Film, *Super Speed*, doz.	.52	.77	1.03	1.03	1.65
Kodak Cut Film Sheath	.10	.10	.15	.15	

No. 3 Eastman Film Sheath	.20
Combination Back with ground glass, for Nos. 3 or 3A Kodaks, Regular Model	4.00
Ditto, for No. 3 Kodak *Special*	4.50
Ditto, for No. 3A Kodak *Special*	5.00

The Prices of Kodak Cut Film Include the Excise Tax

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At your Kodak Dealer's

The Scientific Method of Film Development

Kodak Film Tank

The advantages of science over guesswork are quickly seen in the use of the Kodak Film Tank. Results that an expert could not improve on—and the whole process can be done in daylight.

Your dealer will be glad to show you this easy method of film development.

Price $3.00 up

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Prints by Gaslight

VELOX

is preferred by the amateur who
wants the best
from every negative.

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HOOPER PRINTING CO.,
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